ENVIRONMENTAL ASSESSMENT

Waste Management Planning

Volume 1:
Sectoral Environmental Assessment Proposal For Waste Management Planning

P R O T E C T I O N

C O N S E R V A T I O N

W I S E M A N A G E M E N T

Ontario Ministry of Environment and Energy

Waste Management Planning

Volume 1:
Sectoral Environmental Assessment Proposal For Waste Management Planning

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Preface

Introduction

An improved process for municipal waste planning and approvals has been put in place by the Ministry of the Environment and Energy (MOEE).

The resulting process is based on several years of consultation and discussion with municipalities and other interested parties on ways and means to improve the quality of the process and reduce the time and costs.

The streamlined process integrates the proposed initiatives on Waste Management Master Planning (WMMP) with reforms to the environmental assessment process for landfill siting, and provides clear provincial direction through this document, the "Sectoral Environmental Assessment Proposal For Waste Management Planning".

The key aspects of the new approach include:

- establishing a one-window delivery resulting in consistent timely MOEE direction;
- integrating the Ministry's WMMP program and landfill siting under the Environmental Assessment (EA) Act;
- providing clear provincial direction through a three-volume set of waste management planning documents;
- providing a streamlined approach to waste management planning and landfill siting which reduces time and costs;
- establishing timely reviews and decision-making under the Environmental Assessment Act; and,
- reflecting the 'Commission on Planning and Development Reform in Ontario' recommendations which give municipalities the power they need to plan, finance, establish, control and operate waste management systems with less provincial interference.

Background

The ministry began consultation in 1991, reviewing the existing WMMP program with a view to restructuring the process and program delivery. The intent was to develop a system better-attuned to municipal needs and one which would help promote the provincial waste reduction objectives.

The Ministry consulted with stakeholders including WMMP steering committees, public liaison committees, study co-ordinators, consultants, municipal staff and non-governmental organizations.

At the same time, as part of EA reform, the Ministry began developing a guidance document setting out expectations for proponents involved in landfill siting under the EA Act. These initial proposals were reviewed and improved through working groups and stakeholder consultation.

The two efforts are now merged through this "Sectoral Environmental Assessment Proposal for Waste Management Planning". This single planning document establishes clear Ministry direction to those involved in waste management planning for both diversion (3Rs) and disposal (landfill) under the EA Act. The one window planning direction is delivered through the Environmental Assessment Branch of the MOEE.

Contents of Sectoral EAP

This document is divided into four main sections.

Section 1, *Introduction*, describes the purpose of the EAP and how it is to be considered by proponents.

Section 2, *Waste Management Planning*, describes the five Task planning process. With each Task, the EAP describes a detailed methodology on how to complete the Task. For instance, the EAP provides a detailed methodology on how to identify and evaluate alternative waste management systems.

Section 3, *Pre-Submission Consultation*, describes the importance of consulting with the various Review Agencies and public prior to submitting documentation to the Ministry. In addition to providing a detailed Consultation Plan, this section provides direction on how to identify, inform, and involve the public and how to integrate their concerns into the planning process.

Section 4, *Conclusion*, provides proponents with information on how to prepare EA documentation and advocates, among other things, the importance of undertaking alternative dispute resolution to resolve issues during the planning process. Finally, each Task contains a section describing the required documentation, what each document should address, and their approximate size.

This Sectoral EAP is Volume 1 of a three volume set of documents under the heading 'Waste Management Planning'. Volume 2, *Administration and Funding Guide, and Volume 3, Users Reference Guide To Statutes, Regulations, Policies, Guidelines and Procedures* have been prepared in support of the Sectoral EAP. Copies of all three Volumes can be obtained from the Ministry's Public Information Centre (416) 323-4321 or 1-800-565-4923.

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SECTION 1.0

Introduction

1.0 INTRODUCTION

In recent years there has been a growing demand to divert larger portions of the waste stream from disposal, thereby reducing society's reliance on landfill as our main means of managing waste. As part of this growing interest, the Ministry of Environment and Energy (MOEE) is encouraging those responsible for waste management to adopt "sustainable waste management practices". This involves, among other things, reducing our reliance on disposal and securing environmentally sound waste management facilities in a timely manner.

In working towards creating "sustainable waste management practices", the Ministry has announced a number of initiatives, including,

- Waste Reduction Action Plan, 1991 - This Plan announced the government's commitment to divert a minimum of 50% of the Province's waste from disposal by the year 2000. In 1987, Ontario generated some 10 million tonnes of waste, more than one tonne for every person.

- Bill 7, Municipal Statute Law Amendment Act, 1993 - Among other provisions, this legislation grants enabling powers to municipalities to construct and operate 3Rs facilities, in addition to requiring source separation and providing incentives for waste reduction.

- 3Rs Regulations (Ont. Reg. 101-94 to 105-94) - These Regulations direct (depending on size) municipalities, large retail complexes and manufactures as to the type of 3Rs activities they must pursue. It is estimated that these new Regulations will divert up to 2 million tonnes of waste per year.

- Sectoral Environmental Assessment Proposal For Waste Management Planning, 1994. This EAP provides comprehensive direction on how to conduct waste management planning under the *Environmental Assessment Act.*

For those proponents charged with the responsibility of conducting waste management planning, one of the more significant initiatives has been the preparation of this sectoral EAP. By setting-out explicitly how to undertake comprehensive waste management planning, this EAP will serve to assist proponents in securing environmentally sound waste management facilities in a timely manner and ensure community involvement in the development and implementation of these plans and projects.

1.1 Purpose

The purpose of this sectoral EAP is to describe how to undertake comprehensive waste management planning in keeping with the requirements of the EA Act. The EAP sets out a

systematic waste management planning process that should occur leading up to the submission of an EA document to the Minister of Environment and Energy.

This EAP has been prepared in response to a Ministry initiative to clearly articulate its expectations for sound and comprehensive waste management planning under the EA Act. This sectoral EAP is based on:

- lessons derived from several years of waste management planning;
- decisions of the Environmental Assessment Board; and
- input received from a variety of review agencies and waste management practitioners

Not only does the EAP describe how to identify and evaluate alternative waste management systems, it also provides a detailed methodology on how to locate new landfill capacity within a given study area.

The Ministry recommends that proponents adopt and adhere to the planning process described in this sectoral EAP. Even though this EAP provides numerous benefits for proponents (as noted in section 1.3), adherence to the EAP does not guarantee "acceptance" or "approval" for an undertaking subject to the provisions of the EA Act.

1.2 Sectoral vs Individual EAPs

There are two types of EAPs: 'individual' and 'sectoral'. Proponents either prepare an 'Individual' EAP at the outset of their planning process or follow a sectoral EAP. The following subsections describe the difference between the two EAPs.

1.2.1 Individual EAPs

The Ministry guideline entitled *"Guideline For Preparing Environmental Assessment Proposals (May, 1992)"* provides direction to proponents on how to prepare an "individual EAP". An individual EAP is a document prepared by the proponent describing the planning process which the proponent proposes to follow for the purpose of identifying a preferred undertaking. The EAP should note, among other things, the alternatives, screening and evaluation criteria, and pre-submission consultation activities that will be considered during the planning process. The EAP is shared with participants early in the process in order to solicit comment on the structure of the planning approach.

1.2.2 Sectoral EAPs

Sectoral EAPs (such as this document) are planning documents, which have been prepared by the Ministry, or jointly with other Ministries, that set-out the entire methodology for the planning process for similar types of projects. These sectoral EAPs not only reflect the requirements of the MOEE, but also the requirements and expectations of a wide variety of review agencies. Proponents need not prepare an individual EAP for each project to describe how they will comply with the process set-out in the sectoral EAP. Instead, proponents only need to use the sectoral EAP relevant to their project and, in preparing documentation over the course of the planning process, note any deviations from the EAP and the reason(s)/rationale for the deviation.

1.3 Benefits of Sectoral EAP

By using this sectoral EAP, the proponent achieves a variety of advantages, including:

i) Specific guidance to proponents through articulating the expectations of MOEE and other review agencies.

ii) A more streamlined review of EA documentation by MOEE and other review agencies.

iii) A defined Consultation Plan that sets-out the Ministry's minimum expectations for each Task of the planning process. This Plan will form the basis from which proponents will design their own plan having regard for the characteristics of the study area.

iv) The EAP prescribes what level of detail is required to complete each Task of the planning process.

v) Eliminates the need to prepare an individual EAP.

vi) A reduction in the time and costs presently spent in conducting waste management planning.

1.4 Content

This sectoral EAP is Volume 1 of a three-volume set prepared by the Ministry on waste management planning. The other volumes are the *"Administration and Funding Guide" (Vol. 2)*, and the *"Users Reference Guide To Statutes, Regulations, Policies, Guidelines and Procedures" (Vol 3)*.

This EAP is divided into four sections: Section 1 is the introduction, Section 2 describes the five tasks of the waste management planning process, Section 3 describes the pre-submission consultation requirements, and Section 4 is the conclusion. For each task in Section 2, the EAP directs proponents on how to identify and evaluate alternatives, describes evaluation methods and criteria, provides direction as to the appropriate level of detail and sets-out the minimum expectations for public and agency consultation. The following lists the various tasks of the waste management planning process:

Task 1: The Problem or Opportunity

Task 2: Alternative Waste Management Systems and Diversion

Task 3: Implement 3Rs

Task 4: Landfill Siting Work Plan, and

Task 5: Select Landfill Site and Prepare EA Documentation

In addition, Tasks 1, 2, 3 and 5 are supported by technical appendices which are contained in a separate report and *available upon request from the Ministry*. The section dealing with pre-submission consultation is placed near the end of the EAP to allow reviewers to understand the planning process prior to considering the details of consultation. Throughout the EAP, the minimum consultation activities recommended for each Task are highlighted in shaded boxes. Proponents should begin consultation at project initiation and throughout each task of the planning process. The section on pre-submission consultation is also supported in the technical appendices.

Funding for waste management planning is provided through the Waste Reduction Branch (WRO). The funding compensates proponents up to 50% of the cost of conducting waste management planning. However, this funding does not completely cover all items noted in the EAP or any of the costs associated with preparing a Part V, *Environmental Protection Act* application. The proponent should consult Volume # 2 (Administration and Funding Guide) for information on what items are funded.

1.5 Audience

This EAP has been designed primarily for waste management planning practitioners in the EA process.

In municipal waste management planning, this EAP should be used by consultants, steering committee members, public liaison committee (PLC) members and others who are interested

in the EA process as it relates to waste management planning. A Ministry Fact Sheet is also available summarizing this document.

1.6 Small or Isolated Communities

The Ministry recognizes that conditions in small or isolated communities are different from those communities in the more heavily populated areas of the Province. These differences are dictated by such factors as the nature of public interest and the environmental characteristics of the study area.

In recognizing these difference, the Ministry has highlighted areas where it may be possible for these communities to amend the prescribed level of detail required throughout the planning process. For example, in the case of landfill site selection, the EAP describes identifying both a 'long list' and 'short list' of candidate landfill sites. However, the characteristics of a certain study area may only enable a proponent to identify a short list through a screening process. In addition, the public and agency consultation plan may need to be suitably modified to better fit the expectations of the public in certain study areas. Proponents should use their judgement when amending the level of detail or methodology prescribed in the EAP. Consultation with the EA Branch is recommended before decisions are made.

SECTION 2.0

Waste Management Planning

2.0 WASTE MANAGEMENT PLANNING

Introduction

Funding for waste management planning is provided by the Ministry's Waste Reduction Branch. The funding is designed to provide various jurisdictions (Regional, County and local authorities) with financial assistance to prepare a waste management plan. The purpose of a plan is to set-out how the jurisdiction(s), involved in the preparation of the plan, will manage its wastes over the course of the prescribed planning period.

The planning process is made up of five tasks. Figure 2.0 identifies the interrelationship of each task. The five task planning process reflects the typical decision-making model where a problem is identified, alternative solutions are considered, and each evaluated for the purpose of identifying a preferred course of action. Once a preferred waste management system has been identified, proponents are required to identify a waste diversion strategy for the preferred system. This strategy describes how the waste stream will be reduced, reused and recycled over the course of the planning period.

This section of the EAP:

- identifies each Task of the waste management planning process
- sets-out a detailed methodology on how to complete each Task, and
- notes the documentation that should be prepared upon conclusion of each Task.

Further information can be found in the Technical Appendices Report.

2.1 Task 1 - THE PROBLEM OR OPPORTUNITY

2.1.1 Introduction

The first Task in the process is to identify the waste management problem or opportunity. This information establishes the foundation upon which the entire planning process is based, i.e., the identification of alternative waste management systems and sites.

In most cases, this information is commonly expressed as a 'problem'. That is, for the proponent charged with the responsibility of providing a waste management service, the problem statement identifies the inabilities of the current waste management system (including the landfill site) to manage the projected waste stream over a defined planning period. In terms of an 'opportunity', this task involves proponents:

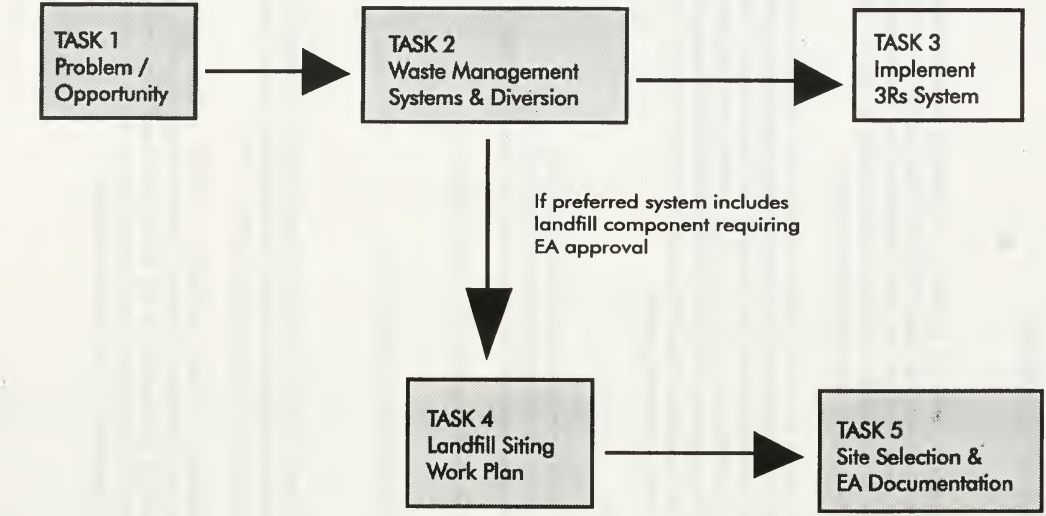


Figure 2.0
Waste Management Planning Process

i) Identifying waste management opportunities within the study area to manage all or a portion of the waste stream, eg. an existing regional 3Rs program.

ii) Providing an opportunity for the public to actively participate in the process of changing and/or improving the current waste management system.

iii) Provide an educational window for the proponent and public to exchange information. This exchange will foster an improved understanding of each others needs and concerns.

This Task of the planning process involves completing the following steps:

(1) define the study area
(2) describe the study area
(3) define a planning period
(4) assess the existing waste management system
(5) project future waste quantities and composition, and
(6) state the waste management problem

Since the problem statement drives the entire planning process, the proponent should describe their problem or opportunity to the public, Ministries and agencies as early as possible in the process.

The shaded box (below) is the first of many that can be found throughout this EAP. These consultation boxes provide an overview of the consultation activities that should be undertaken at this point in the planning process. Section 3.0 of the EAP provides more detailed information on consultation for each Task of the process.

Consultation Plan for Assessing the Problem or Opportunity

- *Prior to the start of Task 1, develop a Public Liaison Committee (PLC) and request membership through public announcements through the local media including newspapers and radio.*
- *Review the proposed problem or opportunity statement with the PLC and key contact interviews.*
- *Prepare Newsletter # 1 and publicly advertise the proposed statement through a media release including Aboriginal media outlets (if applicable).*
- *Contact Ministries and agencies with an interest in this task; the Regional Office of the MOEE should be contacted to discuss the capabilities of the existing waste management system, including the capacity of any existing landfill sites.*

2.1.2 Define the Study Area

As part of identifying the problem/opportunity, the proponent must identify the geographic study area. A geographic study area is the area within which;

i) the municipality or group of municipalities will provide a waste management service;

ii) the remaining capacity and capabilities of the existing waste management system will be assessed; and

iii) any facilities for the new waste management system will be located.

For most Municipalities, the geographic study area will be defined by the jurisdictional boundaries of the Municipality(ies) undertaking waste management planning. In the case of upper tier Municipalities, the study area boundaries will be determined by either the Regional Municipality, district Municipality or county boundaries. In the case of groups of lower tier Municipalities (where upper tier jurisdictions do not retain the responsibility for waste management), the study area is defined by the jurisdictional boundaries of the municipalities involved.

Consultation Plan for Definition of Study Area

- *Contact Ontario Native Affairs Secretariat (ONAS) to determine if there are Aboriginal interests in the study area.*
- *Publicly announce the proposed study area in local newspapers or on radio broadcasts (including Aboriginal media outlets if applicable).*
- *Provide an opportunity for public comment through the media release and first newsletter.*
- *Contact Ministries and agencies with an interest in this task, eg. MNR.*
- *Review proposed study area with the PLC.*
- *Sponsor Open House # 1 to present results of Task 1 activities.*

Section 3.0 recommends consultation activities for study area definition.

With one exception, **the geographic study area used to define the problem/opportunity and evaluate the waste management systems should equate to the same study area used for facility site selection eg. landfill site. This ensures that there is a relationship between the waste diversion capabilities of the study area and the size of any new landfill site.** However, the exception to this will occur where there exists (or plans are in place for) an interregional waste diversion program which serves a large number of municipalities, including the subject study area. Under this scenario, the study area's waste

diversion activities can be tied to the regional waste system and the landfill site selection process confined to the study area defined to calculate the problem/opportunity.

In small or isolated communities, existing Municipal boundaries (or the absence of) may not be conducive to waste management planning. For example, in Northern Ontario, waste is often transported from unorganized communities into organized Municipalities (or vice versa). In such cases, the proponent may want to give consideration to historic service area, travel distance, and the cost of transportation. The proponent should provide a rationale for a given study area and allow the public to contribute to this decision. One approach that may be used for Northern Ontario and unorganized communities is illustrated in Figure 2-1. Given the historic role of the Ministry of Natural Resources (MNR) in providing waste management service to many northern communities, *it is important that the MNR be consulted when selecting a study area where the Ministry has or is providing a waste management service.*

If a proponent elects to use the methodology described in the Figure 2-1, it is important that a rationale be provided for the initial study area, the public be consulted, and the Ministry of Natural Resources be asked for comment.

In unorganized areas or in jurisdictions where upper tier governments do not retain responsibility for waste management, a group of lower tier municipalities may elect to conduct an initial assessment of the waste management problems/opportunities for a certain geographical area before a specific study area is defined. Once a study area is defined based on the outcome of the initial assessment, a problem/opportunity statement can be prepared for the specific study area in keeping with section 2.1.4.

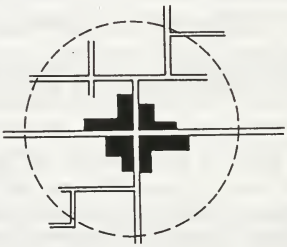
2.1.3 Describe the Geographic Study Area

The *EA Act* requires that the "environment" within the geographic study area be described. This description must include all components of the "environment", as defined in sub-section 1(c) of the *EA Act.* For example, this description would note whether the area is predominantly urban or rural, sources of employment, identify environmentally significant features, describe the type and thickness of the overburden, etc. Appendix A provides further detail with regard to describing the geographic study area.

This description provides the environmental context and basis for the subsequent evaluation of alternative waste management systems. In particular, this information will be used to determine the potential effects to the environment for each waste management system identified for evaluation and will assist in the initial steps of the landfill site selection process (if the new waste management system requires new landfill capacity).

FIGURE 2-1
APPROACH TO
SELECTING A STUDY AREA FOR NORTHERN ONTARIO
AND UNORGANIZED COMMUNITIES

Activity 1 - Initial Study Area Built-Up Area(s)



Establish an initial study area based on:

- transportation costs (as defined by radial distance or travel time from the Town);
- transportation mode (e.g. truck or private vehicle);
- distance/time limitations to transfer facilities (i.e., to optimize the service and convenience of transfer facilities);
- class of road and travel limitations (such as severe weather effects); and
- land use along roads (e.g. presence of sensitive uses)

Provide a rationale for the distance chosen. Distance may be increased if appropriate solutions cannot be found in this area, or decreased if too many siting opportunities are identified. This approach may also be applied to several communities that are within close proximity.

Both are available upon request from the MOEE Program Development Branch at (416) 314-4150. Municipalities are encouraged to review these documents before setting up a HHW collection system.

The description of the existing waste management system should include:

- waste quantities and composition being managed by the existing system, including waste imported or exported in accordance with existing agreements;
- a description of existing waste management practices, programs and systems for both the public and private sector including cost data (wherever available); and
- detailed descriptions of all waste management facilities in terms of their location, physical setting, service area and present usage, including their method of operation, approved and remaining capacity, and potential/existing operational difficulties.

The description for the existing waste management facilities should include:

- a map showing the location of existing sites;
- any Certificates of Approval (C of A), or other operational agreements currently in force;
- reference to any existing site specific documents such as design and operations plans, closure plans, and monitoring plans; and
- a brief summary of the present or potential effects of these facilities on the "environment" (if such documentation exists).

In addition, the proponent should have regard for whether any other municipal, commercial, institutional and/or private sector planning is ongoing or proposed, which may directly or indirectly affect calculating the problem/opportunity within the study area. This should include a description of any planning studies underway within and adjacent to the study area, and discussions of the potential for impact on the planning study underway in terms of possible integration. For example, there may be opportunities available to interact or integrate with nearby 3Rs activities or facilities.

As an integral part of the planning process of the existing waste management practices, systems and facilities, mention should be made of available markets for recycled materials

being diverted from the waste stream. This should include a description of any local markets which have been, or are being established, to accept locally recycled goods.

Project Future Waste Quantities and Composition

To complete the first task of the planning process, the proponent will need to project waste quantities through to the end of the planning period (this information is sometimes expressed in tonnes). Only by obtaining an appreciation for the types and quantities of wastes to be handled can one identify a waste management system suited for the study area. Furthermore, this information will assist in defining the problem or opportunity which will form the basis of the EA planning process.

Projections should be developed to include estimates of future:

- waste generation rates for the planning period; and
- waste quantities and composition.

One of the difficulties in determining per capita waste generation rates is that many municipalities, particularly those with older waste systems, do not weigh their waste when received at the landfill site. Furthermore, waste generation rates can vary across the Province (rural v. urban v. areas heavily frequented by seasonal residents/tourists). Therefore, not all municipalities can accurately describe the composition of their waste stream. For assistance in this area, proponents should obtain a copy of the Ministry's *Ontario Waste Composition Study, 1991*. Reference to the three volume set can be found on p. A-4 of the Technical Appendices.

Throughout the planning process, it may be necessary to review the data on waste quantities at various decision points to ensure that the projections remain valid (e.g. beginning and end of facility site selection). Any assumptions used should be rationalized and documented.

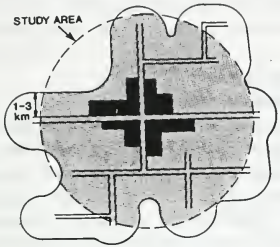
Appendix A describes a method that may be used to project waste quantities and composition for the study area over the planning period.

Assess the Adequacy of the Existing Waste Management System

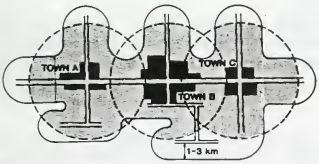
Once the existing waste management system has been described and future waste quantities and composition projected, the adequacy of the existing waste management system can be assessed. The purpose of this step is to assess the capabilities of the current waste management system to accommodate the projected waste quantities and composition, thereby identifying the problem(s) the proponent will need to address.

Activity 2 - Consider Corridors

i) Single Community



ii) For More than One Community



Within the radius establish a distance off all-weather roadways (e.g. 1-3 km) within which to locate a landfill site. The distance off roadways is chosen based on the economic, land use, class of road, and considerations for road construction and allowing reasonable siting opportunities. This distance may be adjusted if solutions cannot be found in the initially defined zone.

2.1.4 Establish the Problem or Opportunity

Once the geographic study area is defined, the problem or opportunity can be assessed. In order to develop a problem or opportunity statement within a defined study area, the proponent should:

- define a planning period;
- describe the existing waste management system;
- project future waste quantities and composition; and
- assess the adequacy of the existing waste management system to manage the future waste quantities and composition.

Each of these steps is described in the following sub-sections.

Define the Planning Period

The Ministry considers a 25 year planning horizon to be a meaningful length of time for projecting waste quantities and composition. Beyond this period, projections become questionable due to changes in technology and society itself. Proponents should also recognize the planning time horizons used by municipalities (e.g. Official and Strategic Plan time horizons) in their study area and the implications of municipal planning exercises on waste management planning.

Describe the Existing Waste Management System

A description of the existing waste management system within the study area identifies the existing components and the quantities and composition of waste managed by each component of the system. This information is important to providing a clear problem or opportunity statement.

All solid non-hazardous waste should be addressed. This includes materials from the residential, industrial, institutional and commercial sectors. An estimate of the wastes managed by the private sector should also be included (if possible). In addition, estimates on the amount of household hazardous waste (HHW) being discarded into the non-hazardous waste stream should be assessed (eg. batteries, cleaning fluids, pesticides, etc.).

Even though municipal jurisdictions do not operate facilities that manage and dispose of hazardous waste, separating HHW can reduce the potential of toxic substances being disposed of in landfill sites designed to receive non-hazardous waste. Landfilling HHW in facilities not designed to accommodate this waste stream can potentially degrade ground and surface waste systems. The Ministry has published two documents entitled "Guide To Implementing HHW Collection Programs" (1986) and "HHW Collection and Facility Guidelines (1993)".

The capabilities of the existing waste management system are assessed by comparing the projected waste quantity and composition estimates (for the study area over the prescribed planning period) to the capabilities (remaining capacity) of the components of the existing waste management system. This comparison allows a proponent to determine the ability of the current system to manage the projected waste generation rates and composition over the planning period. The problem or opportunity statement is defined based on the results of this assessment.

2.1.5 State the Problem or Opportunity

An assessment of the abilities of the existing waste management system to manage the projected waste quantities and composition to be generated (within the study area) over the planning period enables a proponent to identify any deficiencies in the existing waste management system ie. "the problem". As noted earlier, it is this information that will be used to drive the planning process. The following is an example of a problem statement where a deficiency has been identified with an existing waste system.

Example of a Problem or Opportunity Statement

To provide a system to manage 'x' waste quantity, generated in municipality 'A' (or municipalities 'B' or 'C'), for a 25 year planning period consisting of ... (state composition of the waste stream).

Each proponent should prepare a problem/opportunity statement resembling the noted example. This statement should be reviewed by all study participants and the Ministry.

2.1.6 Documentation Requirements

The Task 1 Report should describe the outcome of completing each activity in Task 1 including:

- description of the study area;
- an assessment of the existing waste management system;
- projections of future waste quantities and composition;
- a statement of the waste management problem and opportunities; and,
- a discussion of the consultation activities undertaken during Task 1 and the effect of public and agency input on the proponent's planning process.

The Task 1 documentation should be approximately 50 to 60 pages not including appendices, tables, charts, graphs, etc. A draft should be reviewed prior to finalization of the report.

The draft documentation should be reviewed by those who have demonstrated an interest in this task including the Steering Committee, PLC, the public, local interest groups, the MOEE and other applicable government ministries and agencies before it is finalized.

2.2 TASK 2 - ALTERNATIVE WASTE MANAGEMENT SYSTEMS AND DIVERSION

2.2.1 Introduction

Task Two of the planning process requires proponents to identify and evaluate alternative waste management systems for the purpose of identifying a preferred system. This task of the process addresses the requirement to identify and evaluate "alternatives to", as required by the *Environmental Assessment Act* (EA Act).

The outcome of the evaluation is the selection of a preferred waste management system which commonly includes provisions for 3Rs (reduction, reuse and recycling), waste handling and collection, and disposal. The alternative systems considered by the proponent are evaluated based on their ability to manage, among other things, the waste quantity and composition of the study area's waste stream. When evaluating alternatives, the *EA Act* requires one to identify and evaluate advantages and disadvantages to the "environment" for each alternative, and it is this information that is used by the proponent to identify a preferred system. The proponent identifies one system among the alternatives that has the preferred balance of advantages and disadvantages to the environment.

Section three of this EAP identifies the consultation activities that should be undertaken when identifying a preferred waste management system.

2.2.2 Provincial Waste Diversion Target

Using 1987 waste generation rates as the base year, the Ministry has set a provincial target of diverting a minimum of 50% of the waste stream from disposal by the year 2000. In turn, proponents are encouraged to evaluate alternative waste management systems that are capable of diverting waste from disposal. Once alternative waste management systems have been identified, the proponent will assess the waste 'diversion' and 'disposal' characteristics of each system as part of the formal evaluation process.

Ideally, the Ministry would prefer that each proponent pursue a waste management system that will meet or exceed the provincial target. However, the Ministry recognizes that it may not be possible for every proponent to achieve 50% waste diversion. Inhibiting factors may include the location of the study area in relation to markets to receive recycled materials, ability to implement a new waste system, etc.

It is important for the proponent to document the capabilities of the preferred system (i.e., composition and volume of waste to be managed by each component of the waste system). Proponents should make all reasonable efforts to maximize diversion.

2.2.3 Identify and Evaluate Alternative Waste Management Systems

Whether the proponent elects to rely on existing planning studies or undertake a new or revised analysis, the activities to be covered in the evaluation of waste management system alternatives should include the following six step process:

Steps

One:	Identify Waste Management System Alternatives
Two:	Identify Optimum Number of Landfill Sites
Three:	Define and Describe Alternative Waste Management Systems
Four:	Identify An Evaluation Methodology
Five:	Evaluate the Systems: Identify A Preferred System
Six:	Compare The Preferred System To The 'Do Nothing' Alternative
Seven:	Prepare A Diversion Strategy For Preferred System

Appendix B provides detailed direction on each of these steps.

Figure 2-2 illustrates the methodology involved in identifying and evaluating alternative waste management systems. Included in this methodology are the 3Rs Regulations (Ontario Regulations 101 to 105-94) recently announced by the Ministry. These Regulations specify the types of 3Rs activities that must be undertaken by a variety of waste generators across the Province. It should be noted that the 3Rs Regulations only apply to lower-tier municipalities and their application is triggered by population. Therefore, if an upper-tier municipality (eg. County or Region) is undertaking waste management planning, it would be beneficial for the upper tier jurisdiction to consider alternative systems that would enable or complement the lower tier municipalities ability to comply with the 3Rs Regulations.

Specifically, Ontario Regulation 101-94 will have the effect of minimizing the complexity of designing alternative waste management systems for evaluation. Should there be any uncertainty associated with the requirements of the Regulations, proponents should contact the Ministry's Waste Reduction Branch at (416) 325-4440. A copy of Ontario Regulation 101-94 can be found in Appendix E of the Technical Appendices.

Waste Management Systems Planning

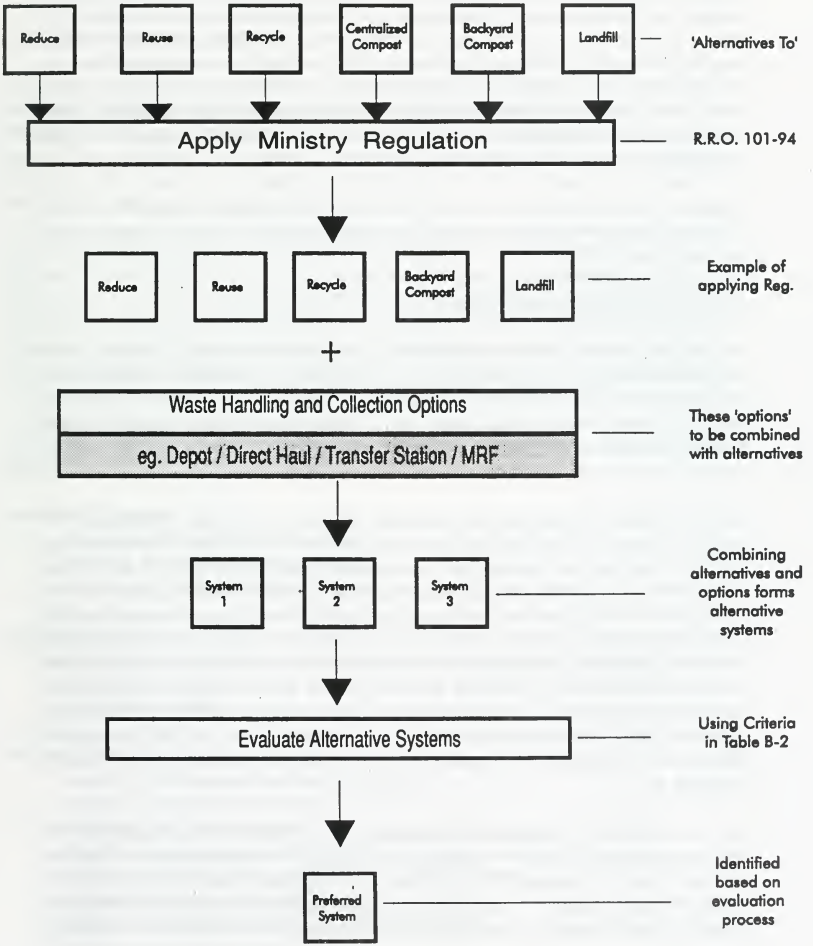


Figure 2.2

The outcome of the evaluation process (the identification of a preferred waste management system) provides a framework for subsequent steps in the planning process, i.e., siting of facilities and implementing the preferred system. For example, a preferred system may divert 50% of the waste stream with the remaining 50% allocated for disposal. In terms of locating new landfill capacity, the size of any new site will be based on the assumption that the preferred site (either existing or greenfield) will need to accommodate 50% of the waste stream. ***It is important that there be a direct link established between the abilities of the preferred waste management system and the size of any new facilities required in support of the system.***

Proponents should obtain input from the public as to their expectations concerning the type of waste management systems that should be considered and on the waste diversion levels that should be achieved.

2.2.4 Identify A Preferred System

The outcome of the alternatives evaluation is the identification of a preferred waste management system. As noted earlier, the process of evaluating advantages and disadvantages to the environment (as required by the EA Act), for the purpose of identifying a preferred system, involves making trade-offs. To ensure a traceable and replicable planning process, it is paramount that the proponent clearly document these trade-offs and the reasons/rationale for the decision.

Once the preferred system has been identified, the final step in the methodology is to compare the preferred system to the 'do nothing' alternative. In most cases, the 'do nothing' alternative describes the existing waste management system and documents the outcome (effects to the environment) should the proponent not implement the new system. The 'do nothing' alternative represents a 'bench mark' against which the proposed system is assessed. Comparing the preferred system to the 'do nothing' alternative serves to demonstrate a 'need' for action, provides a clear rationale for the landfill site selection process - (Task 4), and assists the decision-maker (Minister or EA Board) decide whether the preferred undertaking is in keeping with Section 2.0 of the EA Act. The 'do nothing' alternative should not be eliminated (prior to the net effects analysis) on the basis that it will not fulfil the needs of the proponent. Additional information on the 'do nothing' alternative can be found in Appendix B.

As part of providing a more detailed description of the preferred system, the proponent will need to describe how the various quantities and composition of the waste stream (identified in Task 1) will be managed by the system. This information should be expressed in quantitative terms. It serves to verify that new landfill capacity is required for the study area, clearly defines the amount of waste that will be 'diverted' and the amount to be 'disposed',

and forms the basis of the landfill site selection process (if applicable). Further information on this matter can be found in Appendix B.

2.2.5 Waste Diversion Strategy

Upon identifying a preferred waste management system, the next step in the process is to develop a waste diversion strategy. This strategy describes how the proponent plans to implement the diversion components of the preferred system over the prescribed planning period. For example, if a proponent's preferred waste management system included 'recycling', the strategy would identify how 'recycling' would be initiated and/or how it might evolve over the course of the planning period.

It is important to appreciate that the diversion strategy can have a direct effect on not only the size of the new landfill capacity, but also the timing of the landfill site selection process. Depending on its scope, an aggressive strategy could be capable of diverting additional amounts of the waste stream from 'disposal' over the course of the planning period. Therefore, it is important for proponents to consider what effect the strategy may have on that portion of the waste stream destined for "disposal" over the course of the planning period, prior to finalizing the size of any new landfill capacity (ie. the "footprint" of the site).

There are a variety of waste diversion programs that should be considered by the proponent including:

Reduction Programs
- educational and promotional programs;
- municipal government initiatives; and,
- user-pay and limiting the number of bags.

Reuse Programs
- residential and industrial waste exchanges and reuse opportunities; equipment, books and clothing; and,
- procurement policies.

Recycling/Source Separation Programs
- rural recycling programs (eg. drop-off depots);
- recycling in apartment buildings;
- institutional recycling programs;
- industrial/commercial waste diversion;
- office paper and old corrugated cardboard (ACHE) recovery;
- Household Hazardous Waste (HHW);
- collection of recyclable materials in public places; and,
- materials processing facility.

Composting Programs

- leaf and yard waste composting;
- curbside collection of lawn, garden and household organic waste;
- industrial/commercial and institutional organic waste composting; and,
- wet/dry and three stream collection programs.

Appendix B provides additional information on how to prepare a waste diversion strategy.

Section 3.0 recommends consultation activities for identifying and evaluating alternative waste management systems.

Consultation for Alternative Waste Management Systems

- *Prepare and circulate Newsletter # 2 and update mailing list.*
- *Obtain public input into the different system alternatives, criteria and methods of evaluation through the PLC, and Workshop # 1.*
- *Undertake public Open House # 2 to obtain comment on the preferred system and proposed diversion strategy.*
- *Notify and involve Ministries and agencies expressing an interest in this task.*
- *Obtain PLC and agency input on the preferred waste management system and proposed waste diversion strategy before each are finalized through preparing the draft Task 2 report.*

2.2.6 Documentation Requirements

The Task 2 Report should describe the outcome of completing each activity in Task 2 including:

- a description of each alternative system including the waste 'diversion' capabilities of each system;
- an 'evaluation' of the systems and a discussion of the evaluation methodology;
- a description of the preferred system and its advantages/disadvantages to the 'environment';
- a description of a diversion strategy for the preferred system; and,
- a discussion and description of consultation activities undertaken during Task 2 and the effect of public and agency input on the proponent's evaluation of alternative waste systems and the identification of a diversion strategy .

The Task 2 documentation should be approximately 80 pages not including appendices, tables, charts, graphs, etc. A draft should be reviewed prior to finalization of the report.

The draft documentation should be reviewed by those who have demonstrated an interest in this task including the Steering Committee, PLC, the public, local interest groups, the MOEE and other applicable government ministries and agencies before it is finalized.

2.3 TASK 3 - IMPLEMENT 3Rs

2.3.1 Introduction

The purpose of Task 3 is to implement those 3R components of the preferred waste management system (identified in Task 2) that do not require EA Act approval and are consistent with the diversion strategy defined in Task 2. For example, most municipal non-hazardous solid waste landfill sites require approval under the EA Act. Yet, most transfer stations or processing facilities do not require EA approval and can, therefore, be considered separately under other provincial legislation (if applicable) (ie. Environmental Protection Act, and the Ontario Water Resources Act). Proponents should refer to the Ministry's *"Users Reference Guide To Statutes, Regulations, Polices, Guidelines and Procedures.*

In order to complete this task, proponents will need to determine:

i) the waste management processing capabilities for each component of the preferred system, including the waste residue generated by each component destined for disposal; and,

ii) the conditions under which waste management system components are subject to approval under the *EA Act.*

Section 3 recommends the consultation requirements for this task of the planning process.

2.3.2 EA Act Approval Requirements

In 1987, the Ministry imposed limits delineating the types of waste management undertakings that would be subject to the *EA Act.* The limits are used by the Ministry to decide which waste management facilities are subject to *EA Act* approval. The following provides an overview of the limits. Should further direction be required, the proponent should contact the EA Branch.

a) **Landfill Sites:** All municipal non-hazardous solid waste landfill sites that will serve a population of 1,500 people or greater require approval under the *EA Act* (see Ont. Reg. 334-90 and its associated amendments). These same facilities require approval under Part V of the EP Act and may require approval under other MOEE legislation, e.g. OWRA. In addition, depending on the characteristics of a given application, approval may also be required under other provincial legislation, including the *Planning Act, Expropriations Act,* etc. Proponents should consult the Ministry's *"Users Reference Guide To Statutes, Regulations, Policies, Guidelines and Procedures"*

b) **Processing and/or Treatment Facilities:** Waste management facilities processing and/or treating municipal solid waste that generate 200 tonnes per day or more of a waste "residue" (requiring disposal) are subject to the requirements of the *EA Act*. It is important to note that the 200 tonnes per day of waste refers strictly to the waste residue generated by the facility and not the waste processed or received.

c) **Transfer Station:** All transfer stations designed to receive 300 tonnes per day or more of solid, non-hazardous waste require approval under the *EA Act*.

Once a preferred waste management system has been identified (upon conclusion of Task 2), the focus of this EAP turns solely to providing direction on how to locate new landfill capacity within the study area. Since landfills are normally the only component of most preferred waste management systems that require approval under the *EA Act*, this EAP does not provide direction on how to seek approval for other waste management components requiring EA approval.

For those components (other than landfill) requiring approval under the *EA Act*, the Ministry recommends that the proponent prepare an individual EAP for the Ministry's review and comment. Other review agencies may also need to review the EAP. In such cases, proponents should obtain a copy of the "*Guideline for Preparing Environmental Assessment Proposals*", May 1992, and consult with the EA Branch.

2.3.3 Develop Criteria and Methodology For Siting 3Rs Facilities

The siting of 3Rs facilities is not subject to the EA Act, unless the eventual output of the facility will exceed 200 tonnes per day of residual waste. Even if the EA Act is not applicable, the development of siting criteria and a methodology is suggested to ensure a well thought out siting exercise is conducted. However, the siting process is not as rigorous and detailed as the landfill siting process. The siting of a 3Rs facility is not as constrained by technical requirements as landfill siting. As a result, the location of a 3Rs facility can be determined to a larger extent by community preference.

The criteria that could be considered in siting 3Rs facilities include:

- on industrially zoned land;
- close to a main transportation corridor;
- on land not suitable for agricultural production;
- within the area of greatest waste generation; and,
- adjacent or in close proximity to other components of the waste management system.

2.3.4 Implement 3Rs Components

Once the 3Rs components of the preferred system that do not require EA Act approval have been identified, the proponent should begin the task of preparing the necessary documentation (for which approvals are required) to implement each 3R component consistent with the timing identified in the Waste Diversion Strategy identified in Task 2. Proponents should review the 3Rs Regulations (Ontario Regulation 101 to 105-94). These Regulations provide direction on the approvals required and the operation of these facilities.

Should a component of the waste system include the need for new landfill capacity requiring *EA Act* approval, the proponent then proceeds on to Tasks 4 and 5. For other components requiring EA Act approval, proponents should consult the EA Branch and prepare an individual EAP.

Section 3 recommends consultation activities for this task.

Consultation for Implementation of 3R Components of Preferred System

- *Prepare Newsletter # 3 announcing preferred system and diversion strategy.*
- *Sponsor Open House # 3 to review methodology on siting 3Rs facilities (if applicable)*
- *Aboriginal representative should be contacted (if applicable)*
- *Inform PLC of approval requirements and timing to implement the preferred system over the prescribed planning period.*
- *Contact Ministries and agencies with an interest in this task.*

2.3.5 Documentation Requirements

The Task 3 Report should describe the outcome of completing each activity in Task 3 including:

- identifying those 3Rs components of the preferred system/strategy that do not require approval under the EAA;
- present the criteria and methodology for siting 3Rs facilities;
- identify the necessary approvals documentation required to implement each 3Rs facility; and,
- a discussion and description of the consultation activities (public and agency) undertaken during Task 3.

The Task 3 documentation should be approximately 50 pages not including appendices, tables, charts, graphs, etc. A draft should be reviewed prior to finalization of the report.

The draft documentation should be reviewed by those who have demonstrated an interest in this task including the Steering Committee, PLC, the public, local interest groups, the MOEE and other applicable government ministries and agencies before it is finalized.

2.4 TASK 4 - DEVELOP LANDFILL SITING WORK PLAN

2.4.1 Introduction

This Task applies specifically to those proponents who have, as part of the preferred waste management system, identified in Task 2, a need to establish new landfill capacity requiring approval under the EA Act. This capacity can be found by either expanding an existing landfill site or identifying a new 'greenfield' site within the study area.

In most cases, landfill site selection commonly generates a considerable amount of interest among a variety of groups and individuals within the study area. At the outset of the site selection process, an immediate concern of these individuals is obtaining an appreciation for when and under what conditions they will be asked to participate in the planning process.

In response to this early need for information on consultation, Task 4 requires proponents to prepare a Landfill Siting Work Plan (Work Plan). A key component of the Work Plan is the preparation and presentation of a Consultation Plan. This Plan describes, in detail, how the public and review agencies will be consulted throughout the entire site selection process. The Plan does not serve the purpose of presenting, among other things, the screening and evaluation criteria. This information will be presented to the participants during the landfill site selection process in Task 5. Instead, the Consultation Plan informs the participants of when and how they will be consulted during the process described in Task 5.

2.4.2 Purpose of the Work Plan:

The purpose of the Work Plan is to obtain comment on a proponent's 'proposal' for public and agency consultation during the landfill site selection process and to introduce information that is specific to each study area that the EAP cannot address, but needs to be considered at the outset of the planning process. The information contained in the Plan should represent the proponent's best attempt to provide the required information. However, inherent in this exercise is the need for flexibility to enable proponents to respond to the changing needs and issues as the proponent proceeds through the site selection process.

2.4.3 Preparation of the Work Plan:

This section identifies the required content of the Work Plan and describe the items the Plan should address. The following is a list of each item that should be contained in the Plan:

- *Overview of the Landfill Site Selection Process*: This section of the Plan describes to all interested participants the type of site selection methodology that will be used to identify a preferred landfill site. Further direction of the landfill site selection process is found in section 2.5.4.2. Proponents should review this section before they present their approach in the WorkPlan.

This Overview should identify each step of the process and briefly describe its purpose. It is important to note that the planning process described in this section will need to correspond to the framework of the Consultation Plan.

- *Quantity of Waste to be Disposed:* This statement will note the waste quantity and composition requiring 'disposal' from the preferred system identified in Task 2. This statement is sometimes referred to as the 'Q' value - the quantity of waste for disposal.

- *Study Area:* This section of the Work Plan will identify the study area within which the new landfill capacity will be identified. In most cases, the study area identified for the consideration of alternative waste management systems (Task 2) will be the same area used for site selection. However, there are exceptions; (such as in the case of regional waste diversion studies); proponents should consult with section 2:1.2 of this EAP for direction on establishing a study area.

- *Consultation Plan:* The Consultation Plan will identify, in detail, how the proponent plans to involve the public and review agencies throughout the entire landfill siting process. The Plan should be prepared in keeping with the three main stages of the methodology documented in Task 5:

  1) Planning Process, Section 2.5.4
  2) Site Access and Conceptual Design, Section 2.5.5
  3) Assessment of the Preferred Site, Section 2.5.6

  For example, the Proposal should clearly note when the public will be granted an opportunity to review the five sets of criteria presented in this EAP (including any amendments the proponent may make to the criteria) and how this will be communicated (eg. open house, work shop, etc).

  To assist proponents in preparing a comprehensive Consultation Plan, section 3.0 of the EAP sets-out the Ministry's minimum consultation expectations. (A summary of the Ministry's expectations are noted throughout the EAP in shaded boxes). Proponents should use the information in Section 3.0 as a foundation in preparing the Plan. In preparing the Plan for the study area it is important that it be:

  1) responsive to the need and expectations of the PLC / Public; and,

  2) reflect the dynamics of the study area. For example, in small or isolated communities, it may not be possible to identify a 'long list' of candidate landfill sites. In turn, the Consultation Plan should address this issue and indicate what effect (if any) the omission of this step may have on the publics' opportunity to participate.

  The proponent's Plan should present, in detail, for each step of the site selection process:

i) The anticipated time required to complete each step

ii) When documentation will be prepared and under what mechanism(s) the public will be granted an opportunity to review and provide comment.

iii) For each step, note the planned consultation activity, eg. open house, workshop, etc. In each case, the proponent should note the purpose of the activity and what the proponent plans to achieve by sponsoring the activity.

- *Type of Landfill:* Proponents should briefly describe what type of landfill site will likely be constructed within the study area, ie. attenuation v. engineered. This preliminary assessment is important for two reasons:

  i) the type of landfill site can have a direct affect on the site selection process. For instance, the preferred hydrogeological environment can vary depending on the type of landfill site that will be located within the study area, and

  ii) the preliminary description will provide participants with an initial appreciation for the type of facility that will likely be located within the study area. In some cases, perception can vary between participants as to the type of site each thinks should be constructed (attenuation v. engineered) or, on the other hand, what they believe the proponent plans to construct.

  It may also be advantageous for proponents to include a brief description of the preferred hydrogeological environment and any implications this preference may have on land use.

- *Additional Studies:* This section of the Work Plan will identify (if applicable) what study area specific studies the proponent anticipates will be required based on the provisions set-out in this EAP, in addition to the expectations of those involved in the process. For example, the proponent may wish to provide some indication to the participants as to the type of documentation that is normally required under Part V of the EPA and when this documentation will be prepared during the siting process.

- *Issue Identification:* This section of the Work Plan should identify the issues the proponent anticipates may arise over the course of the landfill site selection process. This section should note the potential implications stemming from these issues and the proponent's planned course of action as to how these issues will be addressed throughout the process.

Consultation for Preparation of the Landfill Siting Work Plan

- *PLC should review Work Plan and Newsletter before release.*
- *Prepare Newsletter # 4.*
- *Sponsor Open House # 4 to obtain comment on proposed Work Plan.*
- *Contact review agencies with an interest in this Task.*

2.4.4 Documentation Requirements

The Work Plan should be prepared within the context of the following parameters;

i) the Work Plan should not exceed 20 pages;

ii) with the exception of section 3.0 of the EAP, the Work Plan should not introduce the detailed information contained in Task 5 since this information will be presented to all interested parties in Task 5, and

iii) a draft Work Plan should be reviewed by the PLC, participants, Ministry (EA Branch), and other applicable review agencies prior to finalization.

If exceptions are required to the above parameters, the proponent should contact their EA Advisor.

2.5 TASK 5 - SELECT LANDFILL SITE AND PREPARE DOCUMENTATION

2.5.1 Introduction

To this point in the waste management planning process, the proponent will have, (as part of the Landfill Siting Work Plan):

i) identified the study area within which the new landfill capacity will be located;

ii) identified the type of landfill likely to be constructed (attenuation v. engineered) and the preferred hydrogeological environment;

iii) set-out, in detail, how and when the public and review agencies will be consulted, ie. Consultation Plan; and,

iv) demonstrated that new landfill capacity is required within the study area.

The purpose of this Task is to begin the process of identifying new landfill capacity. As described in Task 4, the approach to identifying a preferred site involves disseminating information to the study participants as one proceeds through the planning process. Previously, the approach to site selection involved documenting the entire methodology (including the various set of criteria) and receiving comment from both the study participants and Ministry prior to proceeding. However, preparing a comprehensive site selection document at the outset of the site selection process retained a variety of limitations, including:

1) Overwhelming the study participants with evaluation methodologies and criteria.

2) Alienating potentially affected residents/landowners by having finalized screening criteria and weighed evaluation criteria before people were notified that their lands (or people living adjacent to candidate areas/sites) were being considered for landfill. This approach has made it more difficult for proponents to defend the methodology, particularly in cases where criteria were weighed.

3) The preparation of a detailed methodology document made it more difficult for proponents to amend the methodology (and criteria) in response to problems encountered during the planning process.

The detailed systematic site selection process documented in this EAP, reflects the experiences derived from a number of studies that have engaged in systematic site selection. Furthermore, the methodology and criteria reflect the direction provided in EA Board decisions, namely 'Halton Region Landfill Environmental Assessment', 'North Simcoe Waste Management Association Landfill Environmental Assessment', and 'Meaford/St. Vincent Landfill Environmental Assessment'. Therefore, proponents should proceed in accordance

with the methodology and procedures set-out in this EAP, in conjunction with the 'Consultation Plan' prepared in Task 4.

However, the Ministry recognizes that proponents may need to amend the various criteria in response to certain conditions within the study area. Should this occur, these amendments should be presented to the study participants and applicable review agencies at the appropriate point during the site selection process, before any irrevocable decisions are made.

The methodology described in this EAP is a seven-step systematic site selection process. The site selection methodology progressively narrows the study area by first applying screening criteria. These criteria eliminate lands that are not suitable for a landfill site (eg. environmentally significant areas). Stemming from this exercise are candidate areas or those areas remaining after the application of the screening criteria. Candidate sites are then defined within these areas by applying "boundary criteria". These sites are then evaluated using a one and/or two step ("long list" v. "short list") evaluation process. This systematic evaluation process results in a site being identified as preferred, having a rationale basis for its selection.

2.5.2 Principles For Site Selection

The following identifies a number of principles that are key to successful site selection. This information will be helpful to proponents as they proceed through the planning process.

The Site Selection Process Requires A Team Effort: Specialized expertise is required for numerous disciplines (e.g. biology, hydrogeology) that are called upon during the site selection process. Each team member must also be aware of their role in the overall process and their relationship to associated disciplines. For example, the biologist, hydrogeologist, hydrologist and agriculture experts must work together to identify synergistic and other ecosystem effects. Similarly, the social, economic and planned land use disciplines must work together. The efforts of the team members to communicate and work together will be rewarded with a more consistent, cohesive and comprehensive planning process.

The Site Selection Process Should Reflect and be Tailored To The Opportunities and Constraints of the Study Area: For example, in small population communities, the range of siting opportunities may be limited. In turn, the landfill site selection process can be streamlined through reducing the complexity of the criteria and evaluation methodologies. However, all landfill site selection processes should operate within the same established "rules" and that, in each case, they be applied consistently throughout the entire planning process (eg. defining study areas, time frames, engineering assumptions, and planning framework).

In Most Cases, Identifying a Preferred Location for a Landfill Site Among A List of Alternative Sites Involves Making Trade-offs: Seldom does the site selection process provide a clear choice for one site over alternative locations. The exercise of attempting to obtain consensus among the technical disciplines and study participants as to a description of the "ideal landfill site" or "ideal generic siting characteristics" can involve making trade-offs. As

proponents proceed through the siting process and the siting opportunities are narrowed, the advent of trade-offs become apparent. For example, the trade-off often presented to proponents is the relationship between hydrogeologic/geologic site characteristics offering a high degree of natural protection against leachate migration and the same site also having a high rating for its agricultural potential. By identifying the advantages and disadvantages to the environment for each alternative site, any trade-offs made in identifying a preferred site are made explicit which leads to a traceable planning process.

The Preferred Landfill Site Should Meet All Applicable Standards Set By The Federal, Provincial and Municipal Government Agencies And It Must Also Be Shown To Have Been Selected From Among A Reasonable List Of Siting Opportunities: In other words, after the application of the screening criteria there should be enough unconstrained areas in which to identify a reasonable range of candidate areas and sites. A "reasonable list" of siting opportunities is sometimes a function of the scope of the screening criteria, public and agency input and study area characteristics. Experience indicates that at least 8 to 10 sites in the "long list" and at least 3 sites in the "short list" would likely be required to conduct an evaluation. This may vary in smaller communities. Proponents must rely on professional judgement, experience of the study team, and public input in defining what is a reasonable range of sites for detailed review. Questions the proponent should ask themselves in making this fundamental decision include:

- Are all desirable settings within the study area represented by the sites (e.g. less favourable agricultural land, desirable groundwater environments, low quality natural areas, areas with a low population density, etc.), and

- Are key trade-offs and interests identified by the public and agencies included in the range of sites? For example, are trade-offs such as poor agricultural capability versus moderate hydrogeology, low population density versus high agricultural capability, addressed?

Once the proponent has explored these questions with the public (e.g. through Open House # 4 or Workshop # 2 and/or with a Public Liaison Committee - PLC) they should feel comfortable completing the site selection process.

There are generally two options available to a proponent who conducts a site selection search and is unable to locate a suitable landfill site within the defined study area:

(1) Modify the screening and/or evaluation criteria in consultation with the Ministry, other review agencies and the public; or

(2) Undertake a process to consider options outside the study area. (Proponents should consult with the Ministry if this option is considered).

It is the Ministry's position that the proponent fully canvass all siting opportunities within the study area prior to seeking a solution outside the study area.

2.5.3 Landfill Site Selection Process

The systematic landfill site selection process presented in this EAP is made up of the following steps:

1) Planning Process: This step of the methodology serves to identify a location for the new landfill capacity by either expanding an existing landfill site or identifying a new "greenfield" site within the study area.

2) Site Access and Conceptual Design: Once a preferred landfill site has been identified, this step in the process re-examines the preferred access route (identified during the 'Planning Process') to ensure that the proper choice had been made. This step also examines "alternative methods" of construction and operation for the purpose of identifying a preferred conceptual design.

3) Assessment of Preferred Site: The final step in the process is to prepare a more detailed net effects analysis using the conceptual design of the preferred site prepared in Step 2 and the information obtained from studies prepared for other applications, (eg. Part V, EP Act). The Ministry strongly recommends that this additional detail be integrated into the net effects analysis.

2.5.4 PLANNING PROCESS

The following sections describe a seven step methodology the Ministry expects each proponent to adopt when identifying new landfill capacity. However, as noted earlier, there may be situations where these steps will need to be amended in response to such factors as the characteristics of the study area and input from the public, ministries and agencies. Should this occur, any amendments should be presented to the study participants for comment and, if pursued, the reason(s) for the amendment should be noted in the Task 5 documentation.

The following are the seven steps to the systematic site selection process (see Figure 2.3). Please note that as part of preparing the Landfill Siting Work Plan in Task 4, Steps I and II can be addressed in the Work Plan. The seven step process is presented here to provide a complete picture of the landfill siting process. Proponents should not repeat steps that have already been undertaken.

Step I	Define the Scope of Analysis (e.g. define upfront what study areas, time frames and assumptions are to be used at each step).
Step II	Establish the Landfill Site Selection Approach (i.e. the specific steps to be undertaken to systematically select sites).
Step III	Select Applicable Criteria and Determine Relative Importance.
Step IV	Apply Screening Criteria and Identify Candidate Areas.

Step V Revisit Assumption on Required Number of Landfill Sites.

Step VI Identify Alternative Sites within the Candidate Areas.

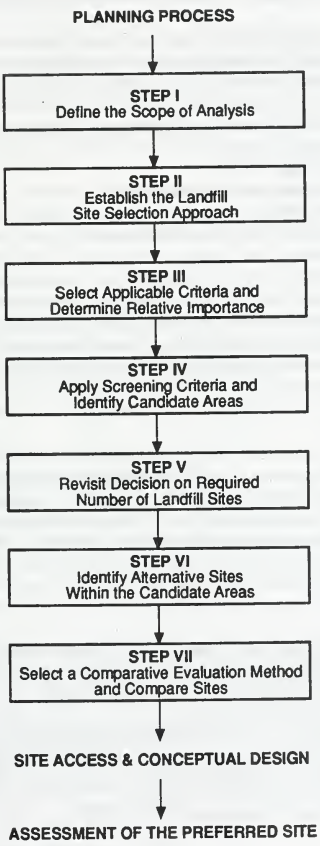
Step VII Select a Comparative Evaluation Method and Compare Sites in one or two comparative evaluation steps.

It should also be noted that the Ministry is not opposed to the criteria (presented in this EAP) being amended to accommodate certain conditions within a specific study area. However, the Ministry strongly recommends that applicable Review Agencies (including the Aboriginal community) be consulted on any amendments that may affect their mandates.

The following provides an overview of each step with Appendix C providing a greater level of detail. Section 3 of this EAP recommends consultation activities which should be undertaken at each step of the site selection process.

Consultation Plan - Introducing Landfill Site Selection

- *Use the Newsletter # 4 and Open House # 4 as opportunities to introduce the proposed site selection steps and consultation activities. The newsletter should indicate a contact person and opportunities to obtain further information.*
- *Introduce the proposed process to the PLC and request their input to designing the process.*
- *Contact Ministries and agencies with an interest in this task.*



LANDFILL SITE SELECTION PROCESS

FIGURE 2.3

2.5.4.1 Site Selection Step I - Define the Scope of Analysis

To ensure that the site selection process is consistent and thorough, the proponent must define the "boundaries" of the analysis. Scoping is to be conducted prior to site selection being undertaken to direct what and how it is to be studied.

At the outset of the site selection process the proponent must decide on the following items:

- the landfill study zones;
- time horizons for effects assessment;
- landfill site assumptions; and,
- approach to describing baseline conditions.

It is very important that these parameters are applied in a logically consistent manner across disciplines and from one site selection step to the next. For example, the rationale for the study zones should be consistent for each discipline and assumptions regarding landfill engineering characteristics should be the same for all disciplines. The following briefly describes each of these items. Appendix C provides greater detail.

Landfill Study Zones

These zones define the area within which potential effects to the environment may occur should a landfill site be located at a specific location. Study zones can vary at each stage of the site selection process depending on the stage of the analysis and the effect being measured. Explicit direction is provided in the Technical Appendices on how to identify Study Zones. It is important to note that the evaluation criteria complement the various study zones identified in Appendix C.

Time Horizons

Time horizons refer to the time frame over which potential effects to the environment will be predicted. The following notes over what time frame the potential effects should be determined at each point in the landfill site selection process:

- 'Long List of Sites' - effects associated with site 'operation';
- 'Short List of Sites' - effects associated with site 'operation' and 'closure'; and
- 'Preferred Site' - effects associated with site 'construction', 'operation' and 'closure'.

This requirement is in keeping with the need to increase the level of detail in developing the alternatives as one proceeds through the planning process.

Landfill Site Assumptions

Assumptions concerning engineering design are used to predict potential effects at each step in site selection. These assumptions are conceptual at the beginning of site selection, but become very specific once sites are identified. At the beginning of site selection, assumptions are made regarding size and degree of engineering for leachate management. For the "short list" of sites, assumptions include transportation (location of haul routes, impact zones, and vehicle number/types), shape of landfill for each site, general facility and layout/location.

At the beginning of the site selection process, it is particularly important to introduce to the study participants the type of groundwater/leachate management strategy the proponent intends to undertake. These assumptions will have a direct effect on the landfill site selection process in that they influence the type of criteria and importance assigned to the hydrogeological environment.

There are two general types of landfill sites: natural attenuation and engineered facility. An engineered facility may contain various degrees of engineering. A fully engineered landfill site would include a synthetic liner and a variety of other engineering devices. A site that relies on natural attenuation would not contain any engineering devices (eg. leachate controls). Appendix C provides further guidance regarding facility characteristics assumptions for each site selection step.

Approach to Describing Baseline Conditions

Baseline conditions refer to the environmental conditions that must be assumed for predicting environmental effects. The state of the environment as it would exist without the proposed facility forms the baseline. The proponent should describe how baseline conditions will be defined. For example, will an existing landfill identified as a candidate site be assessed as open or closed when identifying potential effects to the environment?

Consultation Plan for Landfill Site Selection -
Define the Scope of Analysis

- *Use Newsletter # 5 and Work Shop # 2 as opportunities to introduce this site selection step and provide opportunities for comment.*
- *Introduce this site selection step to the PLC and request their input.*
- *Contact Ministries and agencies with an interest in this step.*

2.5.4.2 Site Selection Step II - Establish the Landfill Site Selection Approach

The Ministry recommends that a systematic site selection approach be undertaken. The goal of this approach is to identify a landfill site, among a variety of alternative sites, having regard for the 'environment' with the values of the community dictating the outcome. The

result is a site that minimizes the negative effects and maximizes the benefit of the facility on the environment.

Since time and cost prohibit examining the entire study area in detail, the approach must focus on those lands within the study area that provide the greatest likelihood of retaining characteristics suitable for siting a landfill. The approach begins by screening out areas which do not meet certain minimum criteria (screening criteria). This is done with secondary source data (i.e. information available without field visits and "on-site" investigations). This focuses the search to areas that are free of certain constraints. These lands are called candidate areas. The Ministry does not consider it appropriate to comparatively evaluate or rank candidate areas. This is based on the notion that smaller candidate areas will have an unfair advantage over larger candidate areas. Candidate sites are then identified within all candidate areas that are larger than the minimum required size.

The comparative evaluation step applies criteria which represent the full scope of the environment. Sites are compared systematically giving consideration to the magnitude and importance of individual effects to the environment for each site and the interactions of effects on the ecosystem. These sites are evaluated in one or two stages and a preferred site(s) identified. The site selection process used to identify and compare alternative sites must be traceable, replicable and comprehensive.

Opportunity Siting Approach: Proponents may elect to incorporate "opportunity" siting into their systematic siting approach. An "opportunity site" is defined as a site that is located within the study area where an owner is willing to sell their property for the purpose of landfill development.

This approach allows for the identification of individual land parcels that are considered to be appropriate for landfill (by the landowner) and that might otherwise have been excluded by the screening criteria (which use general, large scale data sources). If these sites are to be considered in the comparative steps, these sites must also be shown to meet all the requirements of the systematic site selection approach, including the screening criteria. Appendix C, Section 2.0 outlines how the opportunity approach is to be integrated with the systematic site search approach.

Consultation Plan for Landfill Site Selection - Establish the Landfill Site Selection Approach

- *Use Newsletter # 5 and Open House # 2 as opportunities to introduce this site selection step and provide opportunities for comment.*
- *Introduce this site selection step to the PLC and request their input.*
- *Contact Ministries and agencies with an interest in this step.*

2.5.4.3 Site Selection Step III - Type of Criteria and Determining Their Relative Importance

Types of Criteria

In carrying out the site selection process, the EA Act requires proponents to identify potential effects to the environment for each candidate site. These potential effects are identified through the application of evaluation criteria. Since the identification of advantages and disadvantages to the environment for each candidate site is a function of the evaluation criteria, the actual criteria used and how they are applied to identify potential effects are critical to a traceable planning process.

Evaluation Criteria represent those elements of the 'environment' for which potential effects are identified. 'Indicators' define specifically how the effects to the environment are to be measured for each criterion. Any weaknesses in the process of identifying potential effects will be experienced throughout the entire methodology of evaluating alternative sites. To enhance traceability, criteria should be used in a manner that allows those reviewing the documentation to understand how the potential effects to the environment were 'identified'.

There are three types of criteria which should be used in all siting processes. The first are **Screening Criteria** which are used to identify those lands which are most suitable for a landfill (i.e. candidate areas). All areas remaining after application of the screening criteria are divided into sites using the boundary criteria. **Boundary Criteria** are used to take the oddly shaped parcels of the candidate areas and form them into candidate sites of approximately equal size. The sites need to be of similar size to avoid biases against larger sites, (which generally have more associated effects), in the subsequent comparative evaluation step(s). The boundary criteria are applied such that no areas remaining after the screening step are excluded from consideration unless they are too small to handle the expected waste quantities. Finally, **Evaluation Criteria** are used to measure the effect of each candidate landfill site on the environment. These may be applied in several comparative steps (i.e. "long list", "short list"). **Indicators** are the specific measures used to identify potential effects for each criterion.

This EAP recommends criteria for each site selection step as outlined in Appendix C. **Proponents should consider the factors noted below in adjusting and applying these**

criteria to each study area. A rationale for each criterion identified is to be provided in the EA documentation. Providing rationale for each criterion explains to the reviewers and public why the individual criterion is being considered and may also speak to how the 'indicators' were determined.

Evaluation of Criteria

This EAP provides generic screening, boundary and evaluation criteria which should be considered by all proponents, see Appendix C. However, the Ministry recognizes that these criteria may need to be amended in response to specific conditions within the study area. When adding or deleting criteria from the tables contained in this EAP, the proponents should consider:

- clause (1c) of the *EA Act*;
- the results from public and agency consultation;
- the character of the landfill facility;
- the expected range of alternatives (e.g. number of sites) within each step;
- the suggested level of detail of the analysis;
- the character of the potentially affected environment;
- consistency in approach between steps in the process;
- applicability to the evaluation (i.e. presence of features); and
- difference among the sites such that the selected criteria can identify the differences in terms of potential effects to the environment.

For each new evaluation criterion, the proponent will need to provide a definition, indicators and a rationale as to why the criterion is being considered. Any new criteria should be reviewed by the EA Branch study participants and review agencies (if applicable) and the change noted (with reason(s)) in the final documentation.

The criteria identified below are organized into groupings called "disciplines", which collectively represent the "environment" as defined by the *EA Act*. "Disciplines" are useful groupings for organizing the technical work of landfill study teams. The criteria under each discipline are increased in detail as the planning process progresses. Appendix C provides a brief rationale for each discipline (noted below) and includes criteria, rationale and data sources for each site selection step.

- Agriculture;
- Aviation;

- Archaeology;
- Biology;
- Design and Operations;
- Economics;
- Geology/Hydrogeology;
- Heritage;
- Land Use;
- Social;
- Surface Water/Hydrology; and
- Transportation.

In addition, visual, noise and air quality analyses may be undertaken in the final site selection steps to support these disciplines by predicting the magnitude and location of effects for various receptors such as businesses, residents and/or planned land use.

It is important that the inter-connections and linkages among these disciplines are considered in site selection. The biology, aviation (bird hazard), geology/hydrogeology and surface water/hydrology disciplines represent natural systems which must be considered as a whole. Similarly, the agriculture, social, economics and planned land use disciplines reflect the community or social systems. In order to encompass system-wide effects, study zones at the "long and short list" evaluation can be amended (using the methodology prescribed in this EAP) or alternatively defined (using detailed modelling) to consider both the immediate effects of the landfill (e.g. noise, dust, odour) and also the potential for system-wide effects (e.g. potential for down-stream water effects, community effects).

Determine Relative Importance of Criteria

In the application of the comparative criteria, it may be necessary to establish the relative importance of the disciplines and the criteria and/or indicators used to compare sites in Step IV - after candidate areas have been identified. The decision on whether to access the relative importance of the criteria is largely a function of whether the proponent plans to utilize a qualitative or quantitative evaluation methodology. Most quantitative methods require that the criteria be assigned a relative weight or importance. See section 6.7 of Appendix C for additional direction on this issue.

The importance of criteria (to be established based on technical, public and agency input) should be determined after candidate areas have been identified, but prior to the identification of the long list (or short list) of sites. This allows potentially affected landowners to participate in the weighing of criteria (both the long and short list of sites) before sites are identified. Weighing the criteria after the candidate sites are identified would allow study participants to weigh criteria based on individual site characteristics and bias the site selection process.

Some have argued that weights should be assigned to the evaluation criteria prior to Step IV - Application of the Screening Criteria. It has been the Ministry's experience that this approach is disadvantaged for the following reasons:

1) prior to announcing the location of candidate areas, proponents have experienced some difficulty in generating wide spread interest in the site selection process, and

2) proponents sometimes find it difficult to defend a process (before landowners who live in or around the areas) where the site selection criteria are weighed by study participants earlier in the process who (in most cases) do not own land in or around any of the candidate areas. Weighing criteria prior to or after the identification of candidate areas has been thoroughly debated for many years. It is the Ministry's view that the advantages of weighing criteria after candidate areas have been announced outweighs any disadvantages.

However, if a proponent anticipates that, given the characteristics of the study area:

i) the screening criteria will not provide for the identification of candidate areas; or

ii) the candidate areas would not likely be much larger than the size of land required to accommodate the new landfill;

the proponent should weigh (or assign relative importance) to the criteria prior to the application of the screening criteria.

In some cases, proponents may choose to weigh both the evaluation criteria and indicators, ie. assign a relative importance. In conducting this exercise, proponents should give consideration to such factors as the;

- frequency and duration of the potential effects (eg. dust, odour, noise, etc.) that are anticipated;

- distance of the various receptors to the proposed candidate site; distance should be defined from the site boundary or proposed fill area (for the preferred site) to the receptor;

- sensitivity of the receptors to the anticipated effects: For instance, for off-site effects a residential land use 100 meters from the fill area of a landfill site will likely experience a wider variety and greater intensity of potential effects (including duration) than a residential land use 1000 meters from the fill area.

When weighing or assigning a relative importance to the indicators/criteria, the proponent should also consider:

- Provincial legislation and policy statements issued under Section 3.0 of the *Planning Act*, and public values determined through consultation activities.

  Both Provincial policy and public values are important to consider. Government policies have established significance or importance levels for some built and natural features (e.g. wetlands). These should be considered in criteria weighting or ranking. Similarly, the public attributes values to features in their communities which also must be considered.

  Where disagreements occur with regard to the importance of criteria, sensitivity tests may be undertaken to assess the influence of these weights on decision-making. Refer to the next page for direction on "sensitivity tests"

- Potential to mitigate effects, frequency and duration of effects and likelihood of the effect.

  The criteria will also have different levels of usefulness in helping to make decisions about effects to the environment depending on such things as the ability to mitigate the effects being measured by the criteria, the frequency and duration of the effect over time, and the reliability of the measure. For example, effects which are easily mitigated, infrequent and short in duration, and which are not highly likely are often considered to be less important than effects which are difficult to mitigate, are frequent and long in duration, and which are definite (e.g. on-site displacement).

- Level of difference in effects shown by data.

  Once the data are collected there may be further insight into the importance of the criteria. For example, if the data demonstrate that there is no difference among sites for a particular criterion, it would not be useful to attribute a high level of importance to that (otherwise perhaps very important) criterion since it is not helpful in the decision-making process. Conversely, if the data shows that there are some highly significant features associated with a given criterion, it may be appropriate to elevate the level of importance of that criterion (for example, if a study area contains provincially unique biological features).

Scaling The Net Effects

'Scaling' refers to the exercise of arranging the various effects (net effects which are identified through a net effects analysis) for each criteria into levels of magnitude for each site. For example, if there are five candidate sites with a range of 0 - 10 on-site residents, the net effect for a particular criteria measuring disruption to on-site residents could be scaled into low (0 - 3), medium (4 - 7) or high (8 - 10). Scaling the net effect provides an easier means of comparing or interpreting data consistently across candidate sites and can enhance the traceability of the planning process. Unlike scaling where the values vary for each site, criteria weighting or ranking assigns importance to each criterion that applies equally for all sites. Appendix C expands on these concepts.

Sensitivity Tests

If differences in criteria importance are identified by different interests or at different steps in the process, "sensitivity tests" may be introduced to consider alternative criteria weights and their effect on decision making. Appendix C outlines in more detail how to conduct "sensitivity tests" and approaches to establish the importance of criteria.

In preparing the documentation, proponents should provide rationales for the final level of importance allocated to the evaluation criteria. For example, if weights change from the "long list" to the "short list" site comparisons, a rationale should be provided. Furthermore, if a particular criterion has eliminated all the candidate sites to which it applied, the weight assigned to that criterion and other relevant criteria in subsequent steps may need to be adjusted. If public input is used to determine criteria weighting, then an explanation should be provided if the level of importance differs from those suggested by the public.

Consultation Plan for Landfill Site Selection - Select Applicable Criteria

- *PLC to review screening and boundary criteria prior to Newsletter release.*
- *Prepare Newsletter # 5 - include screening and boundary criteria - announce time/location of next workshop.*
- *Hold Workshop # 2 - review screening and boundary criteria, including proposed compensation policy.*
- *Technical review team to begin preparing "long and short list" evaluation criteria.*
- *Contact Ministries and agencies with an interest in this step.*

2.5.4.4 Site Selection Step IV - Apply Screening Criteria and Identify Candidate Areas

To identify candidate areas through a constraint mapping process, screening criteria are applied to the entire study area to delineate lands which are least likely to be suitable for a landfill from those lands which are more likely to be suitable. Those lands which are more likely to be suitable are carried forward for further evaluation and the remaining lands are eliminated from further consideration.

The identification of candidate areas involves the following tasks:

- collect secondary source data relating to the screening criteria for all the lands within the site selection study area;
- analyze data;

- map screening criteria systematically for the whole study area at a recommended map scale of 1:50,000; and

- identify candidate areas (lands left unconstrained by any of the screening criteria).

These activities are described in more detail in Appendix C. Typical screening criteria tables are included in Appendix C. It is recognized that not all of these criteria will be appropriate for all study area environments.

If a proponent is left with a large number of candidate areas after having applied the screening criteria, the proponent is free to apply a second set of screening criteria. If this scenario occurs, the same screening process applies to the identification and application of the new criteria.

It is anticipated that screening will result in the identification of a reasonable number of candidate areas representing a variety of environments from within the study area. From these areas the proponent will identify candidate sites. The proponent should refer to Section 2.5.2 for a definition of "a reasonable list of sites" and note that this range may vary depending on the proponent's circumstances.

Candidate areas should only be announced when the proponent is confident that a reasonable range of siting opportunities remains. At later steps in the planning process, proponents may find it difficult to amend the initial screening criteria to provide for additional sites.

Consultation Plan for Landfill Site Selection -
Apply Screening Criteria and Identify Candidate Areas

- *Notify the public of the selected candidate areas through a media release and provide a contact for obtaining more information or providing comments.*
- *Review the process and results of this site selection step with the PLC after announcement of the areas.*
- *Contact Ministries and agencies with an interest in this step.*
- *Prepare Newsletter # 6 - to announce candidate areas, present long and short list criteria, and announce time/location of next workshop # 3.*
- *Hold Workshop # 3 - to assign weights to evaluation criteria.*

2.5.4.5 Site Selection Step V - Revisit Assumption on Required Number of Landfill Sites

The purpose of this step in the site selection process is to revisit the assumption (made in Task 2) as to what would likely be the most appropriate number of landfill sites in the study area. Given the costs associated with operating more than one landfill, the size and shape of most study areas, and the potential effect to the environment of operating multiple sites,

many proponents find it difficult to entertain the concept of operating multiple landfill sites. Proponents can proceed on to Step VI in the site selection process in cases where the following applies:

i) the decision to operate only one site is clearly rationale,

ii) candidate landfill areas have been identified that are large enough to locate one site, and

iii) there have been no study participants or review agencies questioning the proponents rationale for deciding to construct and operate one site,

However, in cases where one or more of the following conditions exist,

1) a geographically large study area,

2) the study area is irregularly shaped,

3) the candidate areas that were identified are all too small to accommodate the amount of waste requiring disposal,

4) the study participants and/or review agencies have questioned the proponent's rationale for choosing a single site, or

5) there is no overwhelming preference for single versus multiple landfill sites after having identified candidate areas.

proponents should decide on the issue by conducting a formal net effects analysis in keeping with the requirements of the EA Act.

Single versus multiple landfill sites should be considered in light of the following criteria:

- distribution of waste sources;
- location of candidate areas meeting all screening criteria and potential environmental effects based on candidate area data;
- availability and location of reasonable transportation networks;
- potential effects to the social and natural environments;
- locations of other systems component (e.g. centralized 3Rs facilities and transfer stations), if applicable;
- potential for development of waste stream specific sites (e.g. inert fill); and

- associated costs.

Criteria for transportation effects of single versus multiple site systems should also be considered.

Once a decision is rendered on the appropriate number of sites for a study area, the proponent can complete the remaining steps of the site selection process.

Consultation Plan for Landfill Site Selection - Revisit Assumption on Required Number of Sites

- *Review the proposed process for refining optimum landfill number with the PLC prior to proceeding onto Step VI and review the results of the investigation with the PLC and obtain their input.*
- *Present the results of this step in newsletter # 7 and at open house # 5 (see Site Selection Step VI).*
- *Contact Ministries and agencies with an interest in this step.*

2.5.4.6 Site Selection Step VI - Identify Alternative Sites within the Candidate Areas

The next step of the process involves the identification of candidate sites within the candidate areas through applying the 'boundary criteria'.

Some of the areas identified through the application of the screening criteria or sites identified through the "opportunity" identification process may be much larger than the minimum landfill size. To ensure that sites of consistent size are carried forward into the comparative evaluation, similarly sized candidate sites within the candidate areas must be identified. The rationale for this is that smaller sites will generally have fewer displacement and disruption effects associated with them than larger sites and will thus have an unfair advantage over larger candidate sites. There are two approaches which can be followed to identify candidate sites within candidate areas: application of Boundary Criteria or Site Optimization.

Application of Boundary Criteria

This approach involves the application of boundary criteria (see Appendix C, Table C-2) within the candidate areas. This approach is typically suitable for areas which have distinct linear features running through them (i.e. roads, utility corridors). Through the application of the Boundary Criteria, several candidate sites may be identified within a single candidate area. Potentially, there are an infinite number of possible candidate sites within a given area. Consequently, a proponent is not required to overlap candidate sites (i.e. have the same land area contained within two or more candidate sites) unless there appears to be an advantage in doing so (the added site has distinct differences from other sites). The following steps are involved in the application of the Boundary Criteria:

- identify the minimum size of the landfill;
- eliminate candidate areas which are too small for potential candidate sites;
- collect data relating to Boundary Criteria;
- analyze data;
- map Boundary Criteria; and
- identify candidate sites.

A mapping scale of 1:10,000 is recommended.

Site Optimization

In some siting applications (e.g. small population communities), a proponent may find that the Boundary Criteria are not applicable to their candidate areas as the areas are fairly uniform in character and lack linear features. However, in cases where the candidate areas are still large enough to accommodate more than one candidate site, it is recommended that a proponent optimize the candidate site location within each candidate area. This optimization is accomplished by finding the most appropriate location for one candidate site within the boundaries of the candidate area. The following Optimization Criteria are suggested:

- minimize the distance to existing roads to minimize site access costs;
- maximize distance from sensitive features (i.e. residents, community features, sensitive natural features etc.);
- minimize the use of higher capability agricultural lands or higher quality forest resources;
- minimize the number of land parcels consumed; and
- maximize the use of the most suitable terrain conditions (i.e. avoid exposed bedrock areas).

It should be clear that these Optimization Criteria are not the same as "Screening Criteria". At this stage of the process it is assumed that all unconstrained lands are potentially suitable for landfilling purposes. In applying screening criteria, buffers are included which protect the most sensitive and undesirable lands. Thus, the Optimization Criteria only add an extra margin of safety.

Although the proponent may wish to prioritize the Optimization Criteria, it is not mandatory that, for example, the separation distance from a sensitive feature be the same for all candidate areas. The goal is to maximize the distance, not meet some predefined distance.

A proponent undertaking a site optimization approach should be aware that such an approach only allows for the identification of the most preferred site within the study area and does not allow for an overall order of preference for sites since the two most preferred sites may be

within a single candidate area. Thus, if the most preferred site becomes unavailable, a second site may have to be identified within the same candidate area where the preferred site came from and the comparison process re-initiated.

Consultation Plan for Landfill Site Selection - Identify Alternative Sites within Candidate Areas

- *Notify landowners/tenants on-site and in the vicinity of the long list of sites through Notification Letter # 1.*
- *Provide a contact person and a place to obtain further information.*
- *Prepare Newsletter # 7 to identify sites, and announce open house # 5.*
- *Review the results of this site selection step with the PLC concurrent to announcement of the long list of sites.*
- *Request landowners/tenants on-site and in the vicinity of the long list of sites for information about the lands being considered at Open House # 5.*
- *Contact Ministries and agencies with an interest in this step.*

2.5.4.7 Site Selection Step VII - Select a Comparative Evaluation Method and Compare Sites

Following the identification of the candidate landfill sites, the next step in the site selection process is to comparatively evaluate the sites. In most siting applications there will be an initial "long list" of sites (8 to 10 sites) which will be comparatively evaluated at a general level of detail to identify a "short list" of sites (at least 3 sites). The "short list" of sites will then be comparatively evaluated at a greater level of detail by increasing the number of evaluation criteria to identify a preferred site(s).

As previously noted, this two-step comparative methodology may not be conducive in all parts of the Province. In some cases, only a small number of candidate sites may remain after applying the screening criteria (eg. small population municipalities). Should this occur, proponents should conduct their evaluation of these sites at a greater level of detail than what is normally considered at the "long list" of sites.

When conducting a site selection process, the following characteristics should be evident:

1) The decision-making process should be 'traceable' and 'replicable': Evaluation methodologies are tools to assist proponents identify a preferred site among a number of alternatives. In conducting an evaluation, proponents should conduct a systematic evaluation methodology. These systematic methodologies make explicit the proponents assumptions and trade-offs in selecting a preferred site. In turn, this information makes the planning process;

i) traceable - is defined as the ability to follow through, in a logical and systematic manner, the path chosen by the proponent in arriving at its preferred site, and

ii) replicable - is defined to mean that a different person could have reasonably arrived at the same conclusion

Appendix C describes, in more detail, a number of evaluation methods that can be used by proponents. Proponents should also consult the Ministry document *Evaluation Methods In Environmental Assessment*, August 1990.

2) When evaluating alternative sites, each must retain an equal level of detail: To ensure a fair and proper evaluation, it is important that each site be equally represented. If a proponent finds that there is more detailed information available for one site than the others, then the proponent should consider whether the level of information for the other sites should be increased or the additional information for the site in question temporarily set-aside.

The following discusses the Ministry's expectations for both the "long list" and "short list" evaluations.

Comparatively Evaluate the "Long List" of Sites

Step VII may involve the comparative evaluation of the "long list" (if applicable) of sites to identify a "short list". The comparative evaluation will identify those sites with the most potential for being selected as the preferred site(s). A greater level of detail than that used in the identification of the candidate areas is to be used. Typically this involves a roadside survey to confirm secondary information sources (the data sources for the criteria as listed in Appendix C specify the recommended level of detail).

The following steps should be followed to evaluate the "long list" of sites:

- define the "on-site" and "off-site" (0-1000m) landfill study zones for each candidate site; (See Appendix C for further direction.);
- for each study zone, collect data relating to the criteria/indicators noted in Table C-3;
- analyze data;
- map criteria;
- develop and apply evaluation methodology; and
- identify "short list" of sites through a net effects analysis.

These activities are described in more detail in Appendix C.

The net effects analysis should result in the identification of advantages and disadvantages to the environment for each candidate site. In the "long list" comparison of sites, detailed information is not typically available on the design characteristics of the landfill. Thus, it is not possible to predict with absolute certainty what the precise nature of the potential effects to the environment would be from a landfill being developed in each of the candidate sites. Table 2-0 is an example of a Net Effects Table.

TABLE 2-0
Example Net Effects Table
Landfill Site X - Comparison of Long List of Sites

Discipline/Criteria/ Indicators[1]	Data	Environmental Effects	Mitigation/ Enhancement	Net Effects[2]
Social • Compare potential for displacement of residents living on-site · number of dwellings and average number of persons per dwelling	• 4 dwellings representing 12 residents	• 4 families will be permanently displaced	• No mitigation is possible. Compensation may relieve hardship.	• Highest level of on-site displacement of all sites considered. 4 residences (12 residents displaced) ***(Scaling value may be added here)***[3] **0**

[1] Discipline = 'Social'
Criterion = "Compare potential for displacement of residents living on-site"
Indicator = "Number of dwellings and average number of persons per dwelling"

[2] From the net effects column, advantages and disadvantages to the environment are identified in text or table form and evaluated in keeping with the requirements of the *Act*. Though not a requirement of the *EA Act*, net effects serve as a mechanism to identify the advantages and disadvantages for each alternative.

[3] The rationale for the scaling value "0" must be provided separately.

Comparatively Evaluate the "Short List" of Sites

Step VII of the site selection process also involves the comparative evaluation of the "short list" of sites to identify a preferred site(s). Proponents are required to evaluate the "short list" of sites in greater level of detail than that used in the previous comparative evaluation of the "long list" of sites. This evaluation involves:

- increasing the scope of the evaluation criteria;
- collecting "on-site" information (this may include hydrogeological investigations, interviews with affected landowners, and an assessment of the ecological and cultural environments); and
- preparing a conceptual design for each site by refining the facility characteristic assumptions (eg. conceptual landfill design and the selection of an access route) made earlier in the process.

For the required level of detail, the proponent should refer to the evaluation criteria as outlined in Appendix C.

In some cases, it may be necessary to undertake basic site specific predictive modelling for potential noise, air quality and visual effects. The results of this work will help to interpret social, land use, economic, biology and agriculture data. These studies will provide specific study zones for noise, air quality and visual effects and clarifies the magnitude of effects and their geographic overlaps. The decision to conduct this work should be based on the characteristics of the study area, cost considerations, and public and agency expectations.

For Step VII of the Planning Process, assumptions regarding transportation modes and haul routes are required to compare sites. At a minimum for each short listed site, the mode and route should be selected to minimize distance and maximize use of higher order road or rail routes. Alternatively, a comparative evaluation of modes and routes can be undertaken for each short listed site. Portions of routes where effects are expected to be negligible, need not be considered in the effects assessment (See Appendix C - Define Scope of Analysis - Haul Route Study Zones).

The steps involved in comparing the short list of sites are:

- define the 'on-site', 'off-site', 'community', 'haul route(s)' and 'road closure' study zones for each candidate site (See Appendix C for further direction);
- for each of the five study zones, collect data relating to the 'indicators/criteria' noted in Table C-4;

- revisit initial landfill design assumptions and enhance assumptions;
- prepare a detailed site plan for each candidate site (See Appendix C, Section 5.0);
- analyze data;
- map data for indicators/criteria where applicable;
- develop and apply comparative evaluation methodology; and
- select preferred site(s) through a net effects analysis.

These steps are described in more detail in Appendix C. The evaluation of the "short list" of sites must involve a net effects analysis, including the evaluation of advantages and disadvantages for each of the sites in the determination of the preferred site. In most cases, the advantages/disadvantages will be expressed in terms of the relative difference between each candidate site.

Consultation Plan for Landfill Site Selection -
Select a Comparative Evaluation Methodology and Compare Sites

- *Notification Letter # 2 and media release.*
- *Prepare Newsletter # 8 announcing sites and time/location of next Open House # 6.*
- *Select a comparative evaluation methodology with input from the PLC.*
- *Hold Open House # 6 to review criteria and weighing. Review approach to be used to compare sites and to interpret raw data including data scaling categories. Request landowners/tenants on-site and in the vicinity of all sites for information about the lands being considered (both the "short list" and preferred site). This information will assist in comparing the sites. Opportunities for comment and for more information on past and future steps should be provided as well as a contact person.*
- *Review the results of this site selection step (both the "short list" and final site) with the PLC concurrent to announcement of the "short list" and preferred sites.*
- *Contact Ministries and agencies with an interest in this step.*

Select Preferred Site

Comparatively evaluating the short list of sites will result in the identification of a preferred site(s). Documentation for Step VII of site selection should include a clear description of:

- the advantages and disadvantages to the environment for each site considered;

- the method used to select the preferred site with reference to how the criteria and site data were applied;

- all tradeoffs considered in the evaluation with reference to site data and criteria importance; and

- how the preferred site was identified by evaluating the advantages and disadvantages in relation to all other sites considered.

Consultation Plan for Landfill Site Selection -
Identify A Preferred Site

- *Prepare Notification Letter # 3 -notify affected resident(s)/landowner(s); this includes people adjacent to or abutting the preferred site.*
- *Prepare media release after affected resident(s)/landowner(s) have been notified; identify contact person.*
- *Establish a Site Liaison Committee (SLC).*
- *Notify PLC of preferred site after Notification Letter sent, but prior to media release.*

2.5.5 SITE ACCESS AND CONCEPTUAL DESIGN

To this point in the process, a preferred landfill site will have been identified using a systematic site selection process. In addition to considering alternative sites, the Ministry recognizes that there are two additional groups of "alternative methods" that should be canvassed by proponents. These are:

i) transportation mode and access route to the preferred site, and
ii) conceptual design alternatives for the preferred site.

This exercise (through considering alternatives) serves to better define the preferred site by providing a clear rationale for the design and operation of the site, and provides the necessary information to enable proponents to better assess what effect the preferred site will have on the surrounding environment.

The following subsections delineate the Ministry's expectations for considering site access and conceptual design alternatives.

2.5.5.1 Transportation Mode and Route To Access The Preferred Site

The development and operation of the preferred landfill site requires that waste be transported from the waste source to the landfill site. In addition, leachate may have to be transported off-site to an appropriate treatment facility, and cover and liner material may also have to be hauled to the site.

In some cases, there may be available to proponents the option for transporting the waste by either truck or rail. However, in most circumstances, the Ministry recognizes that the preferred mode will be truck transport. In either case, a rationale for the choice of transport should be provided.

With respect to truck transport, potential effects include:

- delays to other road users
- safety for road users and pedestrians, and
- disruption to existing and planned residences and business along the routes due to traffic change, noise and emissions

Rail also has a number of effects, some of which include:

- disruption to adjacent residents
- potential for traffic interference at road level crossing's, and
- interference with regular mainline rail traffic

In addition to the potential effects along the haul routes, there are other considerations which must be taken into account. These include the costs for roadway upgrades or rail line extensions, and the general serviceability and flexibility of the haul mode/route.

After considering the possibility of rail transport and reconfirming a preference for truck transport, the proponent will need to revisit the assumptions (rendered in Step VII - 'short list' of sites) concerning the most appropriate route of access to (what is now) the preferred site. Should a new route be identified at this stage which is different from the route identified for the preferred site in Step VII, the implications of the new route on the site selection process should be considered. However, in most cases, improving the route should increase the site's preference. Furthermore, at this step, it may also be prudent to consider the potential benefits of a transfer station. With the preferred site(s) identified, it will now be possible to accurately estimate the vehicle reduction (service and environmental) benefits, service changes and costs of including transfer stations in the system.

In some situations, only one haul route may be available (e.g. in small or isolated communities). For example, there may be only one existing route that is available or is

considered acceptable to the public and agencies. In this case, the proponent would not be required to evaluate alternative access routes, but should provide a rationale for the choice made. However, in most situations, the "best" route to access the site will be less clear, thus requiring a systematic approach to evaluating the routes.

In some cases, the preferred site may be land locked. Should this occur, proponents may need to consider alternative road corridors from the preferred access route to the preferred site. In most cases, proponents should evaluate the corridors using a net effect analysis. However, using a screening process may be an acceptable means of identifying a preferred corridor.

Approach to Identify Preferred Access Route

In a situation where a clearly preferred mode or route to transport the waste is not evident, the following steps should be undertaken to determine the preferred option:

- define the scope of analysis;
- identify alternative waste transport modes;
- identify the preferred access route for each alternative mode;
- identify the preferred mode;
- select applicable criteria;
- select evaluation approach; and
- select a comparative evaluation methodology and compare alternative routes using a net effects analysis.

Appendix C discusses each of these steps in more detail.

Section 3.0 of this EAP recommends consultation activities for the consideration of alternative transportation modes and methods.

Consultation Plan for Consideration of Transportation Modes and Routes for the Preferred Landfill Site

- *Give notice that routes are being considered to all people who either live or are involved in activities near the alternative routes.*
- *Inform the PLC of the alternatives and request their review and comment.*
- *Indicate in the notice to potentially affected people that this information will be discussed and presented in Workshop # 4 and Open House # 7.*
- *Contact Ministries and agencies with an interest in this step.*

2.5.5.2 Conceptual Design of the Preferred Site

Through the requirements of the EA Act, proponents are required to identify and evaluate alternative methods of carrying out the preferred undertaking. By considering alternative methods of constructing and operating the preferred landfill site, the proponent will be able to:

i) provide a clear rationale for the conceptual design of the preferred landfill site;

ii) provide a conceptual model to concerned residents as to the site's proposed size, appearance and operation;

iii) undertake a more detailed assessment of the preferred site on the environment and propose more refined mitigation measures; and

iv) 'describe' the proposed undertaking in sufficient detail to satisfy the requirements of the EA Act. A "description of the undertaking" should include location, dimensions, construction, and operational plans for the undertaking. The description should specify clearly and comprehensively the intent of the proponent as it relates to the undertaking.

The level to which a concept can be developed for EA approval is dependent upon the amount and type of site-specific data available. For example, a landfill application being simultaneously submitted for *EA Act* and *EPA* approval will have a greater level of information available upon which to develop the landfill design.

One of the main objectives of the design process is to arrive at a single conceptual design which will have acceptable effects and meet regulatory requirements. Proponents should review the following Ministry publications in this exercise:

- Policy 15-08 *"Incorporation of the Reasonable Use Concept into Groundwater Management Activities"*
- Policy 14-15 *"Engineered Facilities at Landfills that Receive Municipal and Non-hazardous Wastes"*
- Policy 07-07 *"Land Use On Or Near Landfills And Dumps"*
- *"Guidance Manual For Landfill Sites Receiving Municipal Waste"*, Nov 1993.

Once the conceptual design is completed and any mitigative measures incorporated, the overall net effects of the landfill may be assessed and compared to regulatory requirements.

Section 3.0 recommends consultation activities for the development of a conceptual design of the preferred landfill.

Consultation Plan for Consideration of Alternative Methods - Landfill Conceptual Design

- *Review conceptual design through the PLC.*
- *Prepare Newsletter # 9 to announce preferred conceptual design and information pertaining to site access. The letter should announce time/location of Open House # 7 and Workshop # 4.*
- *Conduct site tour with SLC and other potentially affected residents.*
- *Hold Workshop # 4 to discuss access routes and alternatives considered for conceptual design.*
- *Hold Open House # 7 after workshop to present preferred access route, conceptual design, and monitoring program.*
- *Contact Ministries and agencies with an interest in this step.*

Approach To The Evaluation Of Design Alternatives

There are a number of 'alternative methods' that could be potentially considered in preparing a conceptual design. The alternative methods considered will be dependent upon:

i) the type of landfill site proposed, ie. attenuation versus engineered site, and/or

ii) the extent of engineering methods proposed in the final design.

For the two major types of landfill sites, Table 2.1 notes the typical alternative methods that should be considered in deciding on a preferred conceptual design.

Table 2.1
Conceptual Design Alternatives

	Alternative Methods	
	Engineered Site	Attenuation Site
1.) Liner Systems	• Compacted Clay • Geosynthetic Liner • Composite (synthetic/soil)	n/a
2.) Leachate Collection Systems	• Underdrain Systems • Perimeter Control i) interception trench ii) toe drain iii) purge well • Impermeable Barrier	n/a
3.) Leachate Treatment	• Sewage Treatment Plant • On-Site Treatment	n/a
4.) Methane Gas Control	• Barrier System • Passive Ventilation • Active Ventilation	• Barrier System • Passive Ventilation • Active Ventilation
5.) Cover System	• Soil • Synthetic	• Soil • Synthetic
6.) End Use	• Final Contour	• Final Contour

Proponents should consult with the Ministry's *Guidance Manual For Landfill Sites Receiving Municipal Waste*, (Nov. 1993) for more detailed information on the methods noted in Table 2.1.

For each alternative method considered by the proponent, a net effects analysis should be prepared to identify a preferred method. For example, in case of methane gas control, the proponent will need to evaluate the advantages and disadvantages to the environment of constructing a barrier system and/or a passive/active collection system.

In some cases, it may be possible to develop a 'screening' process for the purpose of identifying a preferred method for each of the above-noted categories. If this occurs, the

screening process should be reviewed by the study participants and applicable review agencies. Should there be a need for a formal net effect analysis, proponents need only consider those components of the "environment" (primarily the 'technical', 'economic', 'social' and 'natural') that have specific application to assess the merits of the 'methods' considered.

In the conceptual design process, identifying alternatives that merit evaluation can be made based on whether an alternative meets certain technical requirements. Examples of technical requirements for conceptual design alternatives include:

- requirement to meet government regulations and standards (e.g. Reasonable Use Groundwater Quality Criteria)
- minimum buffer zone requirement; and
- geotechnical requirements for landfill base stability.

Proponents must use their judgement to decide which alternatives meet the above criteria (screening) and, therefore, merit consideration in the evaluation process.

Where more than one alternative meets these requirements, proponents should examine the merits of each alternative using a net effects analysis. It should be noted that the evaluation of design alternatives is not entirely independent from one step to the next, but rather, the decisions build upon one another and influence subsequent steps. For example, the leachate management strategy will affect excavation depth, limit of fill and design landform. Similarly, landfill excavation depth influences cover requirements.

Different effects to the environment can be expected with each set of design alternatives (e.g. truck and dust effects for cover materials, visual effects from the landform etc.). Since many of the design decisions are interconnected, the overall goal of the design process is to minimize the effects of the site on the 'environment'. Thus, the evaluation of alternatives at each step must take place in a logical order, and design decisions must be reviewed and reiterated to help address the compounding effects of related design decisions.

In conducting a net effects analysis, the proponent should include the following:

- Describe each alternative and provide a rationale for its consideration.
- Identify evaluation criteria. For most design decisions, some elements of the environment are not relevant. Each criterion should be defined and a rationale provided.

- Identify potential effects to the environment for each criterion.

- Identify possible mitigation measures and identify net effects for each criterion.

- Identify the advantages and disadvantages of each alternative (based on the net effects) and conduct an evaluation for the purpose of selecting a preferred alternative.

The evaluation process should be consistent, logical and traceable. Summary tables may be used to clarify the net effects and the results of the evaluation.

Steps in the Conceptual Design Process

The following are the steps in a representative conceptual design process. These steps may vary depending on individual circumstances. The steps in the process are:

i) visit site
ii) review setting with respect to hydrogeology and other disciplines
iii) review waste quantities and composition
iv) confirm leachate management strategy
v) determine limit of fill
vi) determine maximum excavation depth
vii) estimate final cover and liner thicknesses
viii) design landform (final and base contours)
ix) establish layout
x) develop concept for leachate control/treatment
xi) develop concept for landfill gas control and treatment
xii) develop concept for surface drainage system
xiii) plan operations

Once the conceptual design and operations plan is complete and drawings prepared, these are provided to the team to be used as the basis for the next step in the process (ie. Section 2.5.5). The work to be conducted in Sec. 2.5.5 will identify additional mitigation measures which should be incorporated into the final design and undertaking. In this way, site design is an iterative process where the site assessment disciplines provide feedback on effects to the site designers who, in turn, set out design components to minimize effects to the environment.

The following describes each of the above steps in greater detail:

Step 1) *Visit Site*

The site should be visited to gain an overall familiarity and understanding of the site and its surroundings.

Step 2) *Review Setting with Respect to Hydrogeology and Other Disciplines*

Existing conditions at the site that may have the greatest influence on the conceptual design include geological and hydrogeological conditions, and proximity to both surface water and natural environmental features. At this point in the planning process, data relating to these existing conditions will be readily available. The data will have been obtained from regional scale mapping, on-site visual inspections or surveys, and through preliminary hydrogeological investigations for the "short list" of sites.

In addition, hydrogeological "site-proofing" is conducted at the conclusion of the landfill site selection process to confirm the Regional and local hydrogeological information for the preferred site. These investigations normally involve site drilling and/or digging a number of test pits and installing monitoring wells.

It is also important to obtain information relating to the availability of off-site features that may influence specific design options. Some examples of off-site features that may have a direct effect on the landfill design include proximity to a sewage treatment plant or other facility capable of treating leachate (if required), and proximity to sources of available cover material. The landfill design features that would be affected in these two cases are the proposed method of collection and treatment of leachate, and the base elevation of the landfill.

Step 3) *Review Waste Quantities and Composition*

Since waste quantities will affect the landfill capacity, and composition of waste may affect the design features and operational practices, it is important for proponents to ensure the estimate remains accurate particularly if a considerable amount of time has passed since completing Task 1.

Step 4) *Confirm Leachate Management Strategy*

Based on the hydrogeologic setting and site circumstances, the strategy for managing leachate, that may have been assumed in earlier stages of the process, should be confirmed. Examples of options or choices to be made in finalizing a leachate management strategy are:

- limit or promote infiltration;
- contain leachate or allow controlled release; and
- treat leachate or use natural attenuation.

Some of these options may have already been chosen as part of facility characteristics assumptions from previous steps (e.g. the leachate will be managed using natural attenuation). These previous assumptions should be confirmed in finalizing the leachate management strategy.

This strategy will affect later choices in the design process.

Step 5) *Determine Limit of Fill*

For a given site, the area for waste disposal will be affected by hydrogeological or other constraints and by minimum buffer widths. Buffer widths greater than minimum requirements may be selected depending on the leachate management strategy and other considerations of the setting. When the site area is sufficiently large, it may be possible to develop and evaluate alternative fill areas within the site boundaries. The area available for filling will affect the possible landforms and capacity, as well as the possible displacement or disruption to natural features.

Step 6) *Determine Maximum Excavation Depth*

The maximum excavation depth will depend on the hydrogeologic setting, and the strategy for leachate management. For example, the maximum excavation depth might be determined by the need to maintain a minimum separation distance from an underlying confined aquifer for geotechnical reasons (e.g. limit the depth of the excavation to ensure appropriate hydraulic conditions exist at the site).

Step 7 *Estimate Final Cover and Liner Thicknesses*

These thicknesses will depend on the leachate management strategy and will be used in the capacity and site volume calculations for a given landform. For

example, a leachate management strategy relying on low infiltration might require a complex final cover design which would tend to be thicker than more conventional cover designs. The volume calculations should allow for this thickness.

Step 8) *Design Landform (Final and Base Contours)*

Preliminary designs of the final and base contours are developed with the aim of achieving the required landfill capacity and in keeping with the leachate management strategy. It is usually desirable to achieve a materials balance, if possible, where the excavated soil meets all the soil needs of the landfill (e.g. cover soils and berms). This avoids the import of cover soils or the export or permanent stockpiling of excess soils. Other considerations include visual impact and end use. Alternative landforms may be possible where there is flexibility in terms of excavation depth, fill area, or capacity.

Step 9) *Establish Layout*

The establishment of the site layout provides an opportunity to consider alternative locations for the site features such as the site entrance, on-site roads, stockpiles, ponds, ditches, and buildings.

Step 10) *Develop Concept for Leachate Control/Treatment*

Once landform and layout have been established, concepts for engineered devices may be developed. Except at natural attenuation sites, devices for leachate control and treatment are necessary to protect groundwater and surface water from contaminants leaching from the waste.

Step 11) *Develop Concept for Landfill Gas Control/Treatment*

Due to concerns associated with odour and/or an explosion hazard, landfill gas is usually controlled. Whether or not to collect landfill gas is normally a function of the anticipated levels of gas generation which, in many cases, depends on waste composition.

Step 12) *Develop Concept for Surface Drainage System*

The concept for the surface drainage system establishes the location for ditches and diversion channels, and for storm water management/sediment control ponds. (These facilities require separate approval under section 53 of the OWRA). Apart from location, options may arise in deciding how many

outlets should be established for the site drainage. For example, while the pre-development site might have several natural drainage outlets, it may be desirable to limit them to one or two for the completed landfill to simplify control and monitoring and to reduce the number of potentially effected watercourses.

Step 13) *Plan Operations*

In the broad sense, operations planning will consider options in such areas as:

- development method (ramp, trench, or area);
- development direction;
- phasing;
- hours of operation; and
- types of vehicles to be used.

Review of Previous Landfill Configuration Assumptions

Once the conceptual design has been developed, the original assumptions concerning the landfill configuration made during the 'short-list' evaluation, developed for the purposes of site identification, should be reviewed.

The original landfill configuration was likely square or rectangular. Landfill depth, height, and slopes were also assumed. The site-specific data and preferred design features may no longer be consistent with these earlier assumptions. At this stage of the EA process, it can be expected that the fill area and landform will have changed. These parameters may have an effect on different aspects of the environment. If the design has changed, the effect of this change on the site selection process should be reviewed (e.g. if site minimum size decreases).

2.5.6 ASSESSMENT OF THE PREFERRED SITE

The final step of the landfill site selection process is to document what effects the preferred site will have on the surrounding 'environment'. As noted earlier, as one progresses through the planning process, the level of detail needs to increase.

It is at this stage of the site selection process that a proponent should likely decide when the Part V EP Act application will be submitted in relation to the EA. The Ministry recommends the Part V application be submitted in conjunction with the EA application. Should this occur, the detailed information that will be obtained from the various studies should be integrated into the site selection process. However, proponents are free to submit their EP Act application after the EA has been submitted to the Minister. Should the EA application be referred to the EA Board, the proponent must ensure the EP Act application

has been submitted to the Ministry and referred to the Board before the start of the Preliminary Hearing.

A proponent should address the following steps when completing the Assessment:

1. develop study scope;
2. develop the assessment criteria;
3. describe the baseline environment;
4. conduct net effects analysis for the preferred undertaking; and
5. identify advantages/disadvantages.

The following provides further guidance on each of these steps.

Section 3.0 of this EAP recommends consultation activities to be carried out during this point in the planning process.

The Preferred Undertaking

- *Evaluation criteria and results of impact assessment to be reviewed by SLC and PLC, prior to newsletter.*
- *Produce and distribute Newsletter # 10 announcing results of detailed Part V EPA studies, proposed construction and operation details, and request feedback on effectiveness of PSC.*
- *Provide members of the PLC with documentation for review and comment.*
- *Contact Ministries and agencies with an interest in this step.*
- *Discussion of compensation, monitoring and mitigation programs with SLC.*

2.5.6.1 Develop Study Scope

The site assessment and conceptual design are the starting point for this step in the planning process. These design characteristics are used to define the study scope including the likely extent of effects (study impact zones), time frames for effects, facility characteristics and other study assumptions. The overall approach and methods for data collection and analysis should also be outlined.

Once these are established, it is possible to collect and analyze environmental data.

2.5.6.2 Develop the Assessment Criteria

Based on the facility characteristics and expected effects, criteria for assessing the preferred undertaking can be established.

The starting point for criteria development are the criteria used for evaluating the short list of sites. These criteria are considered in relation to the revised and more detailed site design and operations plans. All components of the environment defined in the *EA Act* should be addressed. A rationale for any components omitted should be provided.

New criteria or indicators are added if required to address revised facility characteristics. These should be clearly defined and a rationale for their selection noted. Additional detail (e.g. hydrogeology) will be influenced by the proponent's decision on whether an application will be prepared under the *EP Act* and submitted in support of the *EA Act* application.

2.5.6.3 Describe the Baseline Environment

The baseline environment is described for each of the assessment criteria. For each discipline and criterion, the existing environment is described for all aspects that are relevant to the facility and its associated expected effects. In addition, baseline studies can be (this depends on a proponent decision concerning a joint EA Act and EP Act submission) undertaken to assess air quality, noise, litter and visual conditions (if these studies were not undertaken for the short list of sites). For each of these, the existing conditions are described for all parameters of relevance to the facility characteristics and likely landfill effects. Furthermore, in keeping with the approach to predicting environmental effects, the baseline environment should be described having regard for the existing and future conditions of the site (in the absence of the landfill site).

2.5.6.4 Prepare Net Effects Analysis for the Preferred Undertaking

This step involves the application of the assessment criteria to determine the potential effects to the baseline environment for the preferred undertaking. To assess the effects (construction, operation, and closure) a proponent is expected to:

- predict both positive and negative potential environmental effects due to the undertaking; and
- determine measures to mitigate or manage potential effects; and
- identify the net effects.

The development of net effects are important for they indicate what is expected to occur should the undertaking be approved and constructed. An example of a net effects table is presented in Table 5.1. This format can also be used for the preferred undertaking.

It is expected that the mitigation measures proposed for the assessment of the preferred undertaking will be of much greater detail than those used in previous steps as the nature of

the undertaking will be much more narrowly defined. These proposed mitigation measures must eventually be tied back into the conceptual design and operations plan for the facility(ies) and will be included in the final description of the conceptual design and operations. Appendix C describes general mitigation measures for landfills.

This iterative process of exchanging facility characteristics and predicted effects information should be clearly documented to demonstrate how effects have been minimized through design or operations measures.

2.5.6.5 Identify the Advantages/Disadvantages

The final step which the proponent must undertake to complete the net effects table is to describe the advantages and disadvantages to the environment of proceeding with the undertaking. It is important to note that the advantages/disadvantages should refer specifically to the effect of the preferred site on the environment (ie. the baseline) and not to the relative differences between the candidate sites. The advantages and disadvantages to the environment are important, since they assist the decision-maker in deciding whether the preferred undertaking should be 'approved'.

2.5.7 Documentation Requirements

Task 5 involves preparing three documents:

- Task 5 Report
- EA Executive Summary
- EA Documentation
- EPA Documentation (if applicable)

This section describes when each should be prepared and what the report should address.

Task 5 Report

This report should be prepared at the end of Task 5 (i.e., once a landfill site has been identified) and should describe the outcome of completing each activity in Task 5 including:

- a description of the landfill site selection approach and methodology;
- a description of the screening process and application of the boundary criteria to identify candidate areas and sites respectively;
- a complete description of the 'planning process' which should include,
  - a description of the 'long list' evaluation (if applicable)
  - a description of the 'short list' evaluation, and

- a description of the preferred site, its potential effect on the 'baseline' environment and proposed mitigation measures;
- a complete description of the 'Site Access and Conceptual Design' phase of the planning process;
- description of the 'Assessment of the Preferred Site' which could include information collected in response to a Part V EPA application;
- a clear indication of what trade-offs were made in identifying the preferred site including the access route and conceptual design; and,
- a discussion of the consultation activities undertaken during Task 5 and the effect of public and agency input on the proponent's planning process.

The Task 5 documentation should be approximately 100 to 130 pages not including appendices, tables, charts, graphs, maps etc. A draft should be reviewed prior to finalization of the report.

The draft documentation should be reviewed by those who have demonstrated an interest in this task including the Steering Committee, PLC, SLC, the public, local interest groups, the MOEE and other applicable government ministries and agencies before it is finalized.

Once the Task 5 report has been prepared, reviewed by all interested parties and finalized by the Steering Committee, the proponent can then begin preparing the necessary documentation for submitting an EA to the Minister for approval.

EA Executive Summary

The Executive Summary should not exceed 40 pages and serves to provide an overview of the entire planning process. This summary should be organized in accordance with the methodology set out in the EAP.

EA Documentation

This document will be submitted to the 'Minister' to support a proponent's request for "acceptance" of the planning process and "approval" of an undertaking. Proponents should consult Ontario Regulation 334-90 before finalizing the EA documentation.

The EA document should:

- be a single document not exceeding 200 pages in size. Proponents are free to cross-reference to the other five task reports. If cross-referencing is used, proponents should list the reports in the EA (and any other reports prepared during the planning process) and where copies of each can be obtained;

- be a 'stand alone' document which speaks to each provision of ss. 5(3) of the EA Act;

- be reviewed in draft by the EA Branch prior to being formally submitted to the Minister for consideration. Proponents may also elect to circulate the draft EA to those review agencies that had outstanding concerns related to any of the five task reports. Proponents should attempt to resolve all issues prior to submitting their EA to the Minister; and,

- be presented in draft to the Steering Committee, PLC/SLC, the public and local interest groups prior to being finalized.

Environmental Protection Act (EP Act) Documentation

If a proponent elects to collect data in Task 5 to satisfy the requirements of Part V of the EP Act, this documentation can be either submitted to the Minister in support of the EA (as supporting schedules) or (if not available at the time of EA submission) submitted to the 'Director' of the Ministry's Approvals Branch as a 'stand alone' application in support of approvals required under the EP Act, Ontario Water Resources Act (OWRA), etc. Proponents are advised that, should the Minister decide to refer the EA application to the EA Board, the EP Act Part V application will need to have been reviewed by staff of the Ministry's Approvals Branch and referred to the Board prior to the start of the Preliminary Hearing.

See the Ministry's *"Guide For Applying For a Certificate of Approval: Waste Disposal Sites (Landfill, Transfer or Processing)", September 1992* for more details on what specific documentation is required by the Ministry.

SECTION 3.0

PRE-SUBMISSION CONSULTATION

SECTION 3.0 - PRE-SUBMISSION CONSULTATION

3.1 Introduction

The Ministry expects proponents to undertake public and agency consultation. As noted in the Ministry's "*Guidelines And Policy On Pre-Submission Consultation In The EA Process*", (Nov. 1987), consultation means to identify affected parties, to provide them with information as needed, to present and explain proposed planning activities and decisions to them, to seek their comments, and modify, as necessary, to accommodate their concerns before proceeding. Proponents and affected parties have found it in their interest to participate in consultation during the planning process. Moreover, effective consultation improves the end product by reflecting the collective knowledge, experience, values and judgement of the proponent and public.

This section outlines the minimum consultation activities which the Ministry expects all proponents to undertake in the waste management planning process. It is recognized that the effectiveness of consultation activities depends on the characteristics of the community (e.g., geography, demographics, etc.), and the individual needs can vary between study areas. However, it is essential that every effort is made to solicit information at key points in the planning process. Each proponent should structure their consultation activities to the needs and character of their study area while meeting the intent of this EAP.

The Consultation Plan described in Section 3.3 outlines the recommended consultation activities for each Task of the Waste Management Planning Process. The Consultation Plan is organized by Task. Proponents should also consult Appendix D of the technical appendices of this volume for further details on PSC activities.

3.2 Objectives of Consultation

The Ministry recognizes that, for every study, consultation may not resolve all the issues and concerns stemming from the exercise of preparing a waste management plan. What it does provide is a mechanism to exchange information between interested parties to ensure, among other things, that the outcome of the Waste Management Plan meets the expectations of the proponent and is designed in keeping with the concerns and interests of the public and review agencies. In this regard, information from the public and review agencies should be used by the proponent to improve the planning process.

A proponent's consultation process should strive to achieve a number of objectives. These include:

- PSC should commence at an early stage;

- the planning process must be open and every effort made to inform those who might have an interest in the planning process;

- the proponent is responsible for establishing a cooperative atmosphere by respecting the needs of study participants. In turn, the study participants have the responsibility to share in a cooperative search for the best solution, and

- planning occurs through a phased sequence of decisions; consultation occurs before final decisions are made and in a manner that allows study participants to contribute to the decision-making process.

To accomplish the objectives of pre-submission consultation, the proponent's consultation plan should provide a fair and equitable opportunity for participation through:

- identifying the various segments of the public in order to design a consultation plan that is flexible and responsive to their various needs and interests;

- identifying key review agencies to the planning process (eg. First Nations);

- informing the public, Ministries and agencies through a two-way flow of information using a range of communication techniques;

- involving the public, Ministries and agencies at key decision-making points in the planning process through appropriate consultation activities;

- learning from the public and agencies by listening and responding to their input; and

- integrating public, Ministries and agency input into the planning process and providing clear and traceable documentation.

Each of these goals are discussed in more detail through the following subsections.

3.2.1 Identify the "Public"

The public-at-large is not a homogeneous entity; instead, it is a composite of interests represented by individuals, organizations and governments. It is important for proponents to understand the composition of the public in a study area. The consultation process should also be flexible to meet the changing needs of the public by altering the level of information and the opportunities for public input that the different interests of the public may require at various stages of the planning process.

A potential list of publics may include representatives from:

- citizens-at-large - interested or concerned individuals living within the study area and in adjacent municipalities;
- social environment - community organizations, service clubs, special interest groups, visible minorities, etc.;
- natural environment - environmental groups, outdoor recreation clubs, etc.;
- economic environment - business organizations, developers, planners and agencies, etc.;
- Aboriginal groups; and
- agricultural organizations.

In defining the 'public', the consultation process is usually designed to include anyone who resides or conducts business within the study area. Depending on the proponent's judgement, the 'public' may also include interest groups outside the study area (e.g. Provincial environmental groups). Assessing who should be involved in the consultation process requires a good understanding of local conditions, including community needs and concerns. Section 3.4 details when and how the Aboriginal community should be involved in the planning process. Once the public has been identified, all groups should be contacted at frequent intervals in the planning process.

Community profiling used at the beginning of the planning process is one way of obtaining an appreciation of the demographic and cultural characteristics of the study area. By using an assortment of techniques, the different segments of the public can be identified. Potential techniques include:

- reviewing demographic data, historical records;
- questionnaires and surveys;
- key community contacts;
- local media publications;
- local journals and other print materials; and
- government reports and documents.

As the planning process proceeds, new public interests and needs may be presented. The consultation process should be flexible enough to adapt to these changing needs and interests.

3.2.2 Identify Key Ministries and Agencies

Based on their mandates, various review agencies (municipal, provincial and federal) provide comments to the proponent during pre-submission consultation on the technical quality of the planning process and proposed undertaking. It is the responsibility of the proponent to identify these agencies with an interest in the planning process and involve them in the process.

The Environmental Assessment Branch of the MOEE maintains an up-to-date detailed list of "Review Agencies" (ministries and agencies) who review the EA documentation. Appendix D contains a summary of key agencies from this list. Proponents should refer to the most recent version of this list when distributing draft documentation. Proponents should also consult with Branch staff for any updates to the list.

3.2.3 Inform the "Public"

In order for the public to become involved in the planning process, they must have access to information. Once they have the necessary information, they are then in a position to contribute to the planning process. In this regard, the goal of the proponent should be to generate awareness of the planning process throughout the community so that individuals can make informed contributions to the process. A variety of communication techniques are available, including:

- booths at local events/malls/shopping areas;
- paid or unpaid advertising;
- news articles and press releases;
- media liaison;
- newsletters, flyers and information brochures;
- telephone information lines or 1-800 numbers;
- summary documents and reports;
- information kits;
- personal telephone calls; and
- kitchen table meetings.

The provision of information through these communication techniques should take place throughout the planning process. An open and informative consultation program will help to establish a level of trust and credibility between the proponent and the community, and will result in a co-operative decision-making process.

3.2.4 Involve the Public, Ministries and Agencies

From the outset of the planning process, once awareness of the project has been generated, the public and Review Agencies should be granted opportunities to contribute throughout the process. The goal should be to generate a two-way flow of information. Not only is it important to provide information, but it is essential that the public and various agencies be given opportunities to review the information and be involved at key points in the decision-making process.

Involving the public and agencies at the key decision points should be determined by the type of information that is available, the type of input that is required by the proponent and the needs of the public and agencies. The consultation activities should be selected to achieve the appropriate level of information exchange recognizing that one or two different approaches may have to be used to meet individual requirements. The following are general consultation activities that can be used:

- information centres or open houses with/without presentations;
- workshops for issue identification, criteria development or site evaluation;
- surveys and comment forms;
- public liaison committees and sub-committees;
- community events;
- special focus committees for compensation, equity and monitoring; and
- information sessions through meetings and round table discussions.

A particularly useful consultation vehicle is the Public Liaison Committee (PLC). By establishing a Committee, early in the process, the public has an opportunity to contribute. A PLC that has representation on a Steering Committee, will also help to create a more open planning process. [Steering Committees are established by proponent to guide the planning process. This Committee usually consists of local politicians, member(s) of the PLC and technical staff from the municipality(s). The Committee normally reports directly to Council.]

3.2.5 Learn From the Public and Agencies

Public consultation involves both listening to the public and agencies and responding to their input (this sometimes includes amending the planning process and/or proposed undertaking). The public can contribute meaningfully to many aspects of the process including the selection of criteria and alternatives, and by pointing out important environmental features within the study area. This input should be recorded and used to improve the planning process and design of the preferred undertaking.

Comprehensive, timely and responsive consultation can change the planning process from adversarial to one of cooperation so that the objectives of the process can be achieved. To achieve this, cooperation requires linking the technical program to the consultation process by listening carefully to the public and agencies, and responding to the information they provide.

3.2.6 Integrating Consultation In The Planning Process

In the *MOEE's Interim Guidelines on Environmental Assessment Planning and Approvals* (1989) and *Guidelines on the Pre-Submission Consultation in the EA Process* (1987), the proponent is advised to begin consultation early and integrate the feedback into planning process. By using combinations of consultation activities and communication techniques, the proponent can provide opportunities to participate in the planning process and ensure that the public and agency input has been documented in a clear and traceable manner.

3.3 The Consultation Plan

As noted earlier, pre-submission consultation is a fundamental component of environmental assessment. Due to the importance of consultation throughout the planning process, the Ministry has set-out its minimum consultation activities for each Task of the process (see Table 3-1). The Ministry anticipates that proponents will adapt the various 'expectations' and, depending on study area specifics and the judgement of each proponent, pursue some of the additional activities if considered necessary.

For Task 1 through 3, the Ministry does not expect proponents to prepare documentation describing how the proponent plans to comply or not comply with the activities noted in Table 3-1. However for Task 4 and 5, proponents will need to prepare a Consultation Plan to be included in the Landfill Siting Work Plan prepared in Task 4. This section will describe the proponents's "Plan" for consultation throughout the various steps of the site selection and landfill design steps of Task 4 and 5. In turn, this 'Siting Work Plan' will be reviewed by the public and agencies for comment prior to being finalized.

The consultation requirements of each Task are described in more detail in the following subsections.

TABLE 3-1
THE CONSULTATION PLAN

Tasks	Expectations	Additional Activities
TASK 1: The Problem / Opportunity	· Develop Public Liaison Committee (PLC) - before starting Task 1 · Newsletter #1 - this letter should announce the start of the process, the entire waste management planning process, the study area and the calculations of the problem/opportunity statement. This newsletter should also announce the date of Open House #1. The PLC should review the newsletter before it is mailed out. · Open House #1 - review of the information prepared for Task 1, primarily the problem/opportunity statement, and introduce the study participants to the entire waste management planning process. In Northern or remote communities, the Open House is optional. · Mailing List - proponents should begin developing a mailing list. It will be used throughout the process, e.g. mailing of newsletters, notice of open houses, etc. · determine if there are Aboriginal interests within the study area and meet with the Aboriginal representatives if an interest is identified. · meet with Ministry Regional staff to review information concerning the existing waste management system · study announcements in local newspapers or on radio including Aboriginal media outlets (if applicable) · letter to key Ministries and agencies announcing the project and establishing the level of involvement desired · obtain comments on this task through the preparation of a draft Task 1 Report	· community profiling · notification letters · advertisements · media release · information centres · telephone line · radio phone-in shows · meetings with special interest groups · review historical records and discuss the community with key contacts

Tasks	Expectations	Additional Activities
TASK 2: Alternative Waste Management Systems and Diversion	· Alternative Systems Evaluation: ·Newsletter #2 - to announce the time and location of Workshop #1, identify the alternative waste systems prepared by the proponent for evaluation, and provide an overview of the evaluation criteria that will be used to evaluate the alternative systems. The PLC should review the letter before it is mailed-out. ·Workshop #1 - consideration of the alternative waste systems and the proposed evaluation methodology and criteria. Furthermore, proponents may wish to begin discussing various aspects of preparing a waste diversion strategy for the preferred system. ·Mailing List - proponents should update. · Waste Diversion Strategy: ·once a preferred system and corresponding draft diversion strategy has been prepared, the PLC should review both. ·Open House #2 - announce the preferred waste management system and draft waste diversion strategy before it is finalized. Northern and remote communities should hold an open house at this point. ·Mailing List - proponents should update. ·obtain public and agency comment on the preferred system and proposed diversion strategy through distributing the draft Task 2 Report ·Aboriginal representatives should be contacted (if applicable) ·contact review agencies with an interest in this Task	· review system alternatives, criteria and methods for evaluation through sub-committee to the PLC or public workshop or workbook · displays in malls, etc. · additional newsletter
TASK 3: Implement 3Rs	· Newsletter #3 - announcement of the preferred waste management system and corresponding diversion strategy. The time and location of Open House #3 should also be identified. The PLC should review the letter prior to mailing. · Open House #3 - this event will introduce the proposed methodology for siting the 3R facilities (if applicable) e.g. a materials recovery facility. Proponents should introduce how they plan to locate a site for such facilities and operational information. · Mailing List - update · Aboriginal representatives should be contacted (if applicable) · contact Ministries and agencies with an interest in this Task	· additional newsletters · informational centres, eg. malls · presentations to community interest groups

Tasks	Expectations	Additional Activities
TASK 4: Develop Landfill Siting Work Plan	· Newsletter #4 - to provide an overview of the systematic site selection process, the Landfill Siting Work Plan, and announce the time and location of the next open house. · the PLC should be granted an opportunity to review both the newsletter and Work Plan before they are sent out. · Open House #4 - to obtain comment on the Work Plan, with particular attention on the Consultation Proposal. · Review Agencies with an interest in this Task should be sent a draft copy of the Work Plan e.g. MOEE · Aboriginal representatives should be contacted and a draft copy sent (if applicable) · Mailing List - update	· media release
TASK 5: Screening and Boundary Criteria	· Newsletter #5 - introduce screening & boundary criteria and announce the time and location of the next workshop; use mailing list. · Workshop #2 - present and obtain comment on the screening and boundary criteria and proposed compensation policy · PLC to review criteria and newsletter before release · contact review agencies with an interest and Aboriginal representative (if applicable) · prepare a draft compensation policy (for on-site testing) before Workshop · review process and results of this step with the PLC after areas are announced · contact Ministries and agencies with an interest in this task	· additional open house
Identify Candidate Areas	· notify the public of candidate areas through a media release and provide a contact person for more information · Newsletter #6 - will announce the candidate areas, location and time of the next workshop, and present the "long list" and "short list" evaluation criteria - use mailing list · Workshop #3 - to assign weights to the long list and short list evaluation criteria; review the evaluation methodology and revisit boundary criteria · contact review agencies who may have an interest at this point · contact the Aboriginal representative (if applicable) · ask PLC to review the newsletter and criteria before they are sent-out · mailing list - update	· meetings with key community groups or contacts
Revisit Required Landfill Number to Fulfil Disposal Requirements	· review proposed planning process with the PLC prior to proceeding · review results of investigation with PLC and obtain input · present results of this step in the next newsletter and open house (see below) · contact Ministries and agencies with an interest in this task	· meetings with key community groups or contacts · sub-committee to examine merits of issuing participant funding

Tasks	Expectations	Additional Activities
Identify alternative sites ("long list") within candidate areas	· Notification Letter #1 - to be sent by registered mail to the landowners/residents and people in vicinity of each site, i.e. abutting landowners/residents. Letters should be received before sites are publicly announced. · media release and identification of contact person · Newsletter #7 - identify the location (graphically) of the "long list" of sites and the time/location of next open house; use mailing list · Open House #5 - present the process leading to evaluation criteria and applicable weighting assigned in Workshop #3 · PLC - should review the notification letter, media release, and newsletter before release; the Committee may elect to prepare the notification letter and media release · request landowners/tenants "on-site" and in the site vicinity to provide information about the lands being considered · contact Ministries and agencies with an interest in this task · contact Aboriginal representative (if applicable) · Mailing List - update	· workshops · broad media release of information · advertising · key community contacts · site group meetings · technical information sessions/ seminars · information kits · radio phone-in shows
Identify "Short List" of Sites	· Notification Letter #2 - to be sent by registered mail to the applicable landowners/residents and to the people in the vicinity of each site, ie. abutting landowners/residents. Letter should be received before sites are publicly announced. · Media release and identification of Contact Person · Newsletter #8 (optional) - identify the location (graphically) of the "short list" of sites and the time and location of the next open house. This letter should also contain the evaluation criteria and applicable weights assigned in Workshop #3. If the proponent feels that a newsletter is inappropriate, this information can be included in Notification Letter #2. · Open House #6 - this event will review the detailed evaluation criteria and associated weights, the proposed evaluation methodology, how the on-site data will be collected and analyzed, and present the "scaling" information for the net effects (if applicable) · PLC - same as in "long list" activities · contact Aboriginal representative (if applicable) · request landowners/tenants "on-site" or in the vicinity of all shortlisted sites for information about the lands being considered · contact Ministries and agencies with an interest in this task	· broad media release of information · advertising · key community contacts · site group meetings · technical information sessions/ seminars · information kits · submission of briefs · radio phone-in shows · discussion of mitigation and monitoring programs · kitchen table meetings
Preferred Landfill Site	· Notification Letter #3 - to be sent by registered mail to the applicable landowner(s) and adjacent residents · Media Release - announcing preferred site, including contact person · Establish Site Liaison Committee (SLC) to assist proponent with conceptual design of site · PLC to remain until formal application made to Minister · update mailing list	· as above · personal contact with applicable landowner/adjacent residents

Tasks	Expectations	Additional Activities
Site Access and Conceptual Design	· establish a Site Selection Liaison Committee (SLC) · Site Tour - with SLC to identify issues that need to be addressed in the design phase - use mailing list · Workshop #4 - discuss methodology for considering alternative access routes, design options and finalize issues identified during tour; use mailing list. Residents living along the preferred access route should be invited to the workshop. · Newsletter #9 - announce proposed conceptual design and information pertaining to site access. The letter should announce preferred access route, time/location of next open house · Open House #7 - after Workshop, hold this event to announce proposed conceptual design, mitigation measures and monitoring program. · contact review agencies who may have an interest · Mailing list - update	· sponsor additional meetings with SLC to discuss methodology for completing this phase of the planning process. · workshop with SLC to review site assessment information, eg. examine proposed mitigation measures, site operation.
Assessment of the Preferred Site	· evaluation criteria and results of site assessment to be reviewed by SLC (and PLC), prior to Newsletter # 10 · data collection (on-site) and analysis to be reviewed by SLC (and PLC) · contact review agencies and Aboriginal representative (if applicable) · Newsletter #10 - announce results of conceptual design, implementation and scheduling of landfill development, up-date on 3Rs implementation, request feedback (response form) on effectiveness of consultation program · consider maintaining SLC over the course of site life and closure	· kitchen table meetings. · additional open house to present results of site assessment

See also Section 3.6 - Consultation Documentation.

3.3.1 Task 1 - The Problem or Opportunity

The introduction and initiation of the consultation program encompasses calculating the Problem/Opportunity. It is also recommended that issues be identified during this Task. Early identification of the issues helps focus the consultation program and tailor it to the study area. As noted in Section 3.2.1, community profiling can be used to identify public issues and interests. [This is particularly important in Northern or remote communities where consultants may have only a limited appreciation for the character of the area.]

Public Consultation

At the outset, the public should be introduced to the five task waste management planning process. Newsletter #1 should provide this information, in addition to what decisions people will be able to influence and any limitations which may constrain the decision-making process (eg. financial limitations).

In the absence of political boundaries, it is important that there be an opportunity for public involvement in the selection of the study area prior to defining the problem or opportunity. Consideration should also be given to Aboriginal interests which are not always limited to reserve territory. At a minimum, it is recommended that the proposed study area be publicly announced in local newspapers or on radio broadcasts (including Aboriginal media outlets if applicable), and an opportunity for public comments be provided. The proponent should contact Ontario Native Affairs Secretariat (ONAS) to determine if there are Aboriginal interests in the study area.

The Ministry also recommends that a Public Liaison Committee (PLC) be established to have representation at all Steering Committee meetings. This Committee should be established before starting Task 1. Further guidance on PLCs can be found in the Administration and Funding Guide (Vol.3). Proponents may wish to advertise membership on the Committee through the local media or use the results from the community profiling to determine the Committee's composition. The composition of the Committee should reflect a cross section of the study area (i.e., both interests and geographic area).

The Consultation Plan also suggests that proponents sponsor Open House # 1. The newsletter # 1 will be used to announce the Open House and should be mailed-out at least two weeks before the Open House. In small or isolated communities, the Open House is optional due to the historically low response to such events. However, if a community feels that there is merit in sponsoring an open house, consideration should be given to holding the open house with another event to promote attendance, eg. service clubs, chamber of commerce, etc.

The next key step of the waste management system planning process is the development of the statement of the problem/opportunity.

This is an important stage of the planning process as it will drive all future work. As a result, any proposed statements of problems or opportunity should be vetted with the public. ***It is recommended that the problem or opportunity statement be reviewed with the PLC and publicly reviewed at Open House # 1. In small population communities, this open house is optional.***

Following the confirmation of the study area and statement of problem or opportunity, it is important that key public issues be identified. This step is important since it focuses the study to issues which are of most relevance to the communities involved.

At key points in the planning process, other rounds of issue identification can be undertaken to check on whether issues have been resolved or new ones have arisen. For example, with respect to consultation, it will provide direction as to the type and extent of involvement the community desires. Early issue identification may also result in the identification of alternatives desirable to that community. ***Newsletter # 1 should be distributed throughout the study area informing the public about the waste management planning process. In this newsletter, there should be a detachable form asking residents to provide their comments and concerns. In addition, it is expected that through the PLC and key contact interviews, public issues will also be identified.*** Appendix D provides more detail on issue identification.

The appropriate consultation activity or communication technique used in the initial stages of the planning process depends on the specific characteristics of the community(s) within the study area. It may take two or three different approaches to generate the two-way information flow between the proponent and public, but the effort in the beginning will pay off in the end. Selected consultation activities and communication techniques may include:

- notification letters to local agencies and politicians (including Aboriginal agencies);
- notification advertisements;
- newsletters;
- mailing list development;
- media liaison;
- PLC formation;
- issue identification workshop;
- information centres;
- telephone information line; and
- meetings with special interest groups (e.g. agricultural organizations, community groups, environmental groups, etc.)

Review Agency Consultation

It is important that Ministries and agencies are notified at the commencement of the planning process. At a minimum, it is recommended that a letter be sent to the Review Agencies noted in Appendix D. The letter should introduce the process, the steps planned and request each agency to indicate whether they are interested in participating in the process and, if so, identify the steps of interest to them and the level of involvement desired. This notification may take the form of a questionnaire with space for the Review Agencies to check their areas and level of interest. For example, some agencies may want to receive only final documents, some may want all draft documents for review and others may desire special meetings at certain points in the planning process.

3.3.2 Task 2 - Alternative Waste Management Systems and Diversion

This task involves the identification and evaluation of alternative waste management systems, including the preparation of a waste diversion strategy for the preferred system. In turn, the Consultation Plan (Table 3-1) has been divided into consultation activities for 'waste system alternatives evaluation' and 'waste diversion strategy'.

In the case of the system alternatives, it is important that the public and review agencies be granted an opportunity to review the proposed alternative systems and evaluation criteria, prior to a preferred being identified. Each alternative system proposed will likely vary in terms of their waste diversion capability and associated costs. The evaluation criteria presented in Table B-3 have been designed to not only measure the potential effect of each system on the environment, but also how much each system will likely cost and what the proponent is capable of spending on a new waste management system. It is important that this information be discussed at Workshop # 1.

Additional activities and techniques which should be considered include:

- advertising;
- presentations and seminars;
- newsletters;
- media updates;
- site tours;
- information centres;
- public input documentation; and
- radio phone-in shows.

It is recommended that during the waste management system alternatives evaluation task that there be a public open house to present the system alternatives and introduce the next tasks

of the process. It is also recommended that Review Agencies expressing an interest in this task be notified and involved.

3.3.3 Task 3 - Implement 3Rs

In this Task, Table 3-1 suggests that proponents prepare a newsletter and sponsor an open house. In Northern or remote communities, proponents are free to exercise their discretion is assessing whether there would be merit in Open House # 3. This decision should be based on the level of involvement and public expectations noted in Workshop # 1. Other activities may include addressing this information in newsletter # 3, information centres and presentations.

3.3.4 Task 4 - Develop Landfill Siting Work Plan

As noted earlier, one of the key components of the Landfill Siting Work Plan is the preparation of the Consultation Plan. This Plan must describe, in detail, the proposed consultation activities for each step of the site selection process documented in Task 5. Since the landfill site selection process can sometimes be confronted with unexpected issues, the Plan may need to be revisited/amended in Task 5.

It is important that the proponent makes every effort to obtain comment from a wide variety of groups and individuals. Furthermore, applicable review agencies should be sent a draft copy of the Plan for comment eg. EA Branch, MOEE, Aboriginal representative and/or Ontario Native Affairs Directorate (if applicable).

3.3.5 Task 5 Select Landfill Site and Prepare EA Documentation

The landfill site selection process requires comprehensive consultation to make sure that the public and review agencies have enough information to contribute meaningfully to the process. The Consultation Plan has been designed to obtain public and agency comment at each step of the process. However, proponents will need to refine this Plan using their own judgement and discretion.

The following subsections relate to the specific steps noted in Table 3-1. The corresponding step in the systematic site selection process (documented in Task 5) is also noted for reference purposes.

Apply Screening Criteria and Identify Candidate Areas

Once the screening criteria are applied and candidate areas identified, it is recommended that the public be notified of the location of the areas through a media release and/or newsletter. The media release should inform the public of a contact person and of how to obtain more

information on the process used to identify the areas as well as the next planning steps. Opportunities for public, Ministry and agency comment should also be available.

It is recommended that the PLC review, among other things, the results of this site selection step. This should take place after the areas have been announced to avoid any release of inaccurate or incomplete information.

Additional activities for this site selection step include an open house and meetings with key community groups and contacts (e.g. Municipal council members, environmental groups).

Revisit Required Landfill Number to Fulfil Disposal Requirements

It is recommended that the PLC, with appropriate public input, review the proposed process for confirming the optimum landfill number prior to proceeding with this step. The results of the investigation should also be reviewed with the PLC for their comment.

It is recommended that the final landfill number be presented at an open house and via newsletter.

Additional activities for this step include meetings with key community groups or contacts (e.g. Council members).

Identify Alternative Sites ("long list") within Candidate Areas

Once the boundary and evaluation criteria (including the evaluation methodology) have been prepared by the proponent and considered by the public in Workshop # 3, then candidate landfill sites can be identified. At this Workshop, the public should be asked to suggest additional criteria or data sources and for their assessment of criteria importance (ie criteria weighing). The reason for incorporating community values is that it should be the community itself which helps to determine which environmental attributes merit the most protection. This Workshop will be most effective if the public is informed of the requirements of government legislation, guidelines and policies. It is paramount that this workshop occur before the criteria are applied to the study area. Once the "long list" of sites is identified, these criteria rankings are reviewed in Open House # 5 so that the public is aware of the actual trade-offs which have to be made during the site selection process.

At this step, the consultation process must inform the public about the process that led to selection of the "long list" of sites, notify landowners and affected residents of the "long list" of sites in a sensitive and timely manner, and provide opportunities for public input and comment.

It is recommended that landowners/tenants "on-site" and in the vicinity of the "long list" of sites be notified through letters (through registered mail or hand delivered), in advance of the media and general public. These letters should not be delivered on a Friday.

Consideration should be given to restructuring the PLC to represent more of the interests of people who may be directly affected by the landfill facility (e.g. local residents).

Landowners/tenants "on-site" or in the site vicinity may have information they would like considered in future steps. It is recommended that they be asked to provide this information.

Select a Comparative Evaluation Method and Compare Sites

During this step a "short list" of sites is identified as well as the preferred site.

It is recommended that the PLC provide input to the selection of the comparative evaluation method(s) for the long and short list evaluations. A sixth Open House should also be undertaken to review previous criteria importance values and the method(s) proposed to evaluate sites, including the approach to interpret the raw data.

Once the "short list" of sites is identified it is recommended that landowners/tenants "on-site" and in the site vicinity be notified through letters delivered simultaneously. Hand delivery by the Chairman or member of the Steering Committee (which can include a member of the PLC) is advised where feasible. The same procedure is recommended for the preferred site announcement. However, proponent's should avoid making these announcement on a Friday.

It is recommended that both the selection of the "short list" of sites and the preferred site be reviewed with the PLC concurrent to site announcement.

At this stage, proponents should seek from the "short list" residents and/or landowner, including those in the variety of the sites, information concerning local sources of data, the characteristics of each site and obtain an appreciation for the person's awareness of the site selection process. This final set of information will enable proponents to refine their 'Consultation Plan' to better suit site specific variations. This information can be obtained during the interview process of obtaining data for the social impact assessment.

Additional activities for this step may include:

- workshops;
- broad media release of information;
- advertising;
- key community contacts;
- site group meetings;

- technical information sessions/ seminars;
- information kits;
- submission of briefs;
- radio phone-in shows;
- consideration of compensation;
- mitigation and monitoring programs; and
- consideration of participant funding.

Site Access and Conceptual Design

Once a preferred landfill site(s) has been identified, a preferred transportation mode route (in some cases mode) must be reassessed and a conceptual design for the preferred site prepared.

Site Access

Consultation should involve opportunities for the affected public to review the evaluation of the preferred access route. These consultation activities should include potentially affected residents along the preferred haul route. The consultation program needs to:

- inform the affected public of the preferred route, including the alternatives considered.

Defining the minimum level of consultation for this step is difficult since so much depends on what alternatives are available (if any) and the characteristics of these alternatives. At this point in the process, the Ministry is recommending that proponents sponsor Workshop # 4. This Workshop will serve the purpose of viewing the alternative site access routes and the process that led to the identification of the preferred route. Residents that live within 500 meters of the preferred route should be notified of the workshop. In addition, the workshop will begin the process of preparing a conceptual design for the preferred landfill site. This design should directly reflect the input received from the public.

Consultation activities to be considered for this step of the planning process include:

- information flyer;
- advertising;
- site group meetings;
- public workshops;
- information centres;
- presentation and seminars;
- radio phone-in shows;
- signs along possible access routes; and
- 'kitchen table' meetings

The purpose of these consultation activities is to allow affected residents in the vicinity of the site and along potential haul routes an opportunity to provide input on the selection of transportation modes and routes.

Agency consultation should be considered with all agencies who expressed an interest in this step during the notification process.

Conceptual Design

In determining the preferred landfill conceptual design, consultation should focus on the affected residents within the vicinity of the preferred site. Different design scenarios need to be evaluated using criteria that consider the concerns of the affected residents. The consultation program needs to allow the affected resident to:

- consider different design scenarios; and
- develop mitigation and monitoring programs.

Due to the complex nature of the landfill conceptual design process, a significant effort must be spent to ensure the public understands the technical information. It is recommended that the proposed design be reviewed through the SLC and local site group meetings. Also, depending on project timing, the proposed design could be presented at Open House # 7. If the local community demands more opportunity for input into the conceptual design, an additional workshop should be considered.

Agency consultation should be considered with all agencies who expressed an interest in this phase during the notification process.

Assessment of the Preferred Site On The Environment

The final step of this task of the planning process is assess what effects the preferred undertaking will have on the environment. The minimum level of consultation expected at this stage is in the review of the approach to considering potential effects and the results of the analysis. Newsletter number ten should be produced and distributed announcing the approach and results of the study and where the documentation is available for review. Members of the SLC should also be provided with documentation for review and site group meetings should be considered for affected residents and interest groups. Activities should address issues such as compensation, mitigation and monitoring programs.

Agency consultation should be considered with all agencies who expressed an interest in this step during the notification process.

Prepare Documentation

Once the preferred site has been identified and the consultation complete, draft EA documentation of the entire planning process should be prepared. The SLC (and PLC if applicable) should be granted an opportunity to review the documentation, including the various Review Agencies and public. The documentation should be made available for review by the public at various locations in the study area (eg. library, etc).

During the review of the draft EA documentation, the Ministry strongly encourages all proponents to meet with the Review Agencies to resolve any outstanding issues associated with the proposed undertaking for which EA approval will be sought. The proponent should also strive to obtain 'clearance letters' from each of the review agencies indicating that their concerns have been addressed and, therefore, need not participate in the formal government review process.

In addition, the Ministry strongly recommends that the proponent continue to meet with the SLC and PLC in an effort to resolve any outstanding issues. Issues may include proposed mitigation measures, site operation, etc.

3.4 Aboriginal Community Involvement

The social, cultural and economic differences between the Aboriginal communities and other urban or rural communities necessitates a specific approach to consultation where Aboriginal interests exist.

The approach to consultation should respect and incorporate the Aboriginal way of life, traditions, cultural values and economic activities. It is recommended that a culturally appropriate and community-based consultation program include working with Aboriginal leadership in:

- carrying out community profiling (if required) to determine community characteristics and to identify Aboriginal interests;
- conducting interviews with key Aboriginal representatives such as Chiefs, Band Administrators, Economic Development Officers or their consultants;
- recommending an appropriate facilitator (if applicable) to work with the Aboriginal interest; and
- developing a community involvement program that jointly sets out goals and objectives.

The basis of the consultation program should be to develop working relations between the proponent and the Aboriginal group(s). Any information obtained through these working relationships should be included in the decision-making process. Subsequent information should be incorporated at other stages in the study such as the EA submission or the design and/or operation of the proposed facility(s).

3.5 Consultation Checks and Balances

It is important to provide some indication as to the effectiveness of the consultation activities through feedback mechanisms so that the program can be modified or enhanced to provide the public with greater opportunities to be informed and to participate. One of the main objectives of any consultation program is to remain flexible and responsive to changing needs and interests.

The use of comment forms, questionnaires or letters can provide feedback on the effectiveness of the consultation activities. For example, the use of periodic focus groups can determine the degree of awareness and acceptance in the community or the level of objection with the project.

3.6 Consultation Documentation

With consultation generating input to the planning process, it is important that an efficient information management system at the beginning of the process. This system is capable of documenting all the issues that are raised and the response provided. Not only are these systems an efficient and effective manner of managing issues, they enable the public and review agencies with the means to trace how their input did or did not affect the planning process.

The consultation program should have an information management system that can:

- store mailing list information
- retrieve names and addresses;
- store information requests;
- produce summaries of information distributed to individuals or organizations;
- highlight key issues;
- aggregate information gathered through surveys/interviews; and
- organize other primary material.

As well, issues papers can then be produced for workshops and other events that summarize input.

The consultation process should be clearly described in a summary which is submitted with the EA documentation. This summary should include:

- the goals and objectives of the consultation program;
- a description of how public and agency input affected the planning process and design of the proposed undertaking;
- a list and summary of all public meetings, agency meetings, workshops or other forums (including date, place, information provided and comments received);
- copies of newsletters, hand outs, workbooks and other publications (with distribution lists and dates);
- a compilation of responses to public/agency comments and questions including reference to any changes made to the planning process (e.g., criteria or alternatives added or deleted); and
- a description of outstanding issues and why they could not be resolved.

Following the key decision points in the process and the release of documents, there should be established review periods at which time the public, Review Agencies can make comments on what was carried out during the previous stage of the planning process as well as suggest refinements to the activities for the upcoming planning stage.

SECTION 4.0

CONCLUSION

SECTION 4.0 CONCLUSION

The purpose of this section of the EAP is to provide proponents with direction on how to prepare EA documentation, including support documents. This section also reviews three issues that normally arise during the waste management planning process and direction is provided on each. Section 4.3 provides an overview of the documentation that is required to complete each task of the waste management planning process.

4.1 Preparing EA Documentation

As noted in the *Interim Guidelines on Environmental Assessment Planning and Approvals*, (July 1989) the EA should strive to represent accurately the planning process that was followed in a clear and understandable way, and to communicate the results of that process. The way in which the principles of EA were addressed should be clearly explained in the EA. This can be termed "traceability". Clarity, simplicity and consistency are objectives as well as completeness and precision.

The EA documentation should be prepared in a manner that follows the decision-making process described in this sectoral EAP. Supporting documentation should be prepared in support of all of the detailed analyses and background data considered. For example, this documentation might include the detailed analyses for each discipline (e.g. hydrogeology, design, biology, etc.) for the preferred site.

The EA should be a "stand alone" document. The main EA report should specifically address each provision of ss5(3) of the EA Act. The reader should be able to trace the analyses and decisions made without reference to supporting documentation. Proponents are responsible for the circulation to and collection of agency comments at the draft stage.

Draft EA documentation should be circulated for review to the public and Review Agencies who have expressed an interest in reviewing the documentation.

In addition to documenting the planning process, the EA should include the following sections:

Introduce the EA Document

In documenting the planning process, the proponent should first introduce the EA. The introduction to the EA document provides a road map for the reader with regard to the history of the project and the organization of the EA document(s). The introduction to the EA documents(s) should:

- define the proponent;

- provide an overview of the process undertaken; and
- describe the organization of the EA document(s) and all related approvals documents that might be the subject of a hearing should one be required.

The following discusses each of these requirements in more detail:

Define the Proponent

The legal jurisdiction and authority of the proponent should be described as well as any binding agreements among the member municipalities (eg. Board of Management Agreement). A map showing municipal boundaries and member municipalities should be included.

Provide an Overview of the Planning Process

The proponent should clearly define the steps undertaken in the planning process and the key decision points. Diagrams or charts may be helpful to illustrate the steps undertaken. The proponent should clarify the steps in decision-making that occur repeatedly such as consultation, defining the scope of the analysis, selection of criteria and analysis.

The schedule for the planning process should be described, including past activities and the expected time frame to complete the approvals process.

Identify Approvals Required for Undertaking

The proponent should plan to submit draft documentation for review, prior to formerly submitting the EA document. Should approval be required under the EP Act, the Ministry recommends that the proponent prepare the Part V application and submit it in support of the EA application. Having the Part V application prepared becomes particularly significant should the application be referred to the EA Board or if the proponent elects to seek a hearing under the *Consolidated Hearings Act*.

Supporting Studies

It is the responsibility of the proponent to inform the public of all documents used or prepared in support of the proposed undertaking, including any additional documents that will be prepared prior to/or after submission. The location of the documents and their relationship to one another should be clear. A list of these documents is required when the formal application is submitted by virtue of Ont. Reg. 334-90 of the EA Act.

The EA should identify all the approvals required to construct and operate the proposed undertaking. This would include a list of approvals required by the Ministry and any other review agency, (eg. *Planning Act.*, etc).

4.2 Special Issues

There are certain issues that commonly arise in waste management planning. These issues include:

- participant funding;
- consideration of compensation policy; and
- alternative dispute resolution.

4.2.1 Participant Funding

Proponents may choose to provide participant funding at any point in the planning process. Participant funding involves providing funding to study participants (prior to formally submitting an EA) to provide them with the means of participating in the EA planning process and development of an undertaking. By providing groups with funds to seek independent advice and become better-informed, the public can participate more effectively in the planning process. Documentation prepared through the participant funding process is prepared for the use of the proponent to improve the planning process.

For those applications that are referred to the EA Board, the *Intervenor Funding Project Act* provides for the administration of funds to parties who meet the Act's eligibility criteria. Intervenor funding provides financial assistance to intervenors in preparation for the formal hearings process.

4.2.2 Compensation

The effects from landfills should be managed, controlled or reduced to the greatest extent possible. After this has been accomplished, proponents may also wish to consider financial compensation.

Should a proponent elect to pursue compensation, it is recommended that proponents familiarize themselves with the policies adopted by other proponents. In this way they will be prepared to discuss compensation with the public when the issue arises prior to initiation of the landfill site selection process.

4.2.3 Alternative Dispute Resolution

Waste management planning can be controversial. The prospect of a landfill may engender fear and conflict that must be handled carefully in the planning process. Proponents may choose to use mediation/facilitation techniques to help dispel tension and resolve conflicts.

Mediation/facilitation techniques provide an intermediate person or agency to help to reconcile opposing interests. Facilitation techniques help to move the process forward and may be used to assist the public or other decision-makers understand and assess options at any task. However, before initiating, the attempt to resolve issues through mediation should be supported by all parties.

Examples of recommended consultation activities where these techniques may be used include:

- public workshop for consideration of alternative waste management systems;
- landfill siting workshops;
- transportation mode/route selection workshop;
- landfill conceptual design workshop;
- all PLC activities; and
- public or site group meetings to discuss landfill design and development once the landfill site has been selected.

These techniques should also be considered after landfill development to support community monitoring efforts.

4.3 Overview - Documentation Requirements

In total, five reports will be prepared over the course of completing each Task of the waste management planning process, ie. one report for each Task. Each report will vary in size and complexity. Prior to preparing the EA documentation, each report should be reviewed and approved by the Steering Committee.

Once the five tasks are complete, the proponent will then prepare the EA documentation. Among other things, the EA document identifies and describes the "undertaking" which the proponent is seeking approval for under the EA Act, and describes the planning process which was used to identify the "undertaking". The EA document should describe how the proponent's planning process addressed each provision of subsection 5(3) of the EA Act. Once finalized, the EA document (and all supporting

documentation) is submitted to the Minister for "acceptance" of the planning process and "approval" of the undertaking.

All landfill applications require approval under Part V of the EP Act, and may also require approval under other statutes administered by the Ministry, eg. OWRA. In many cases, proponents prepare and submit with the EA (as supporting schedules) documentation in support of approvals required under the EP Act, OWRA, etc. As noted earlier, proponents are free to choose between submitting an individual EA versus submitting the EA supported by documentation prepared in support of other applications. Proponents are advised to discuss the two options with their EA Advisor prior to submitting their EA to the Minister.

ACKNOWLEDGMENTS

The Ministry would like to acknowledge the valuable assistance of a large group of individuals who assisted the Ministry in preparing this EAP and its associated documentation (Volumes 3 and 4).

Valuable input was provided by the Waste Management Master Plan (WMMP) Restructuring Discussion Groups and WMMP Restructuring Steering Committee that led to the development of the five task methodology documented in this EAP. These two groups were also instrumental in assisting the Ministry prepare Volume 2 - Guide To Funding and Administration (formerly the Guide to Municipal Waste Planning In Ontario). The Discussion Groups and Steering Committee consisted of representatives from WMMP Steering Committees, Public Liaison Committees, Study Coordinators, Consultants, the Association of Municipalities of Ontario, public interest groups, the general public and MOEE staff.

The Ministry would also like to acknowledge the valuable assistance of a Working Group that served to assist the Ministry in preparing this sectoral EAP. This Group was instrumental in directing the Ministry on what level of detail should be included in the EAP, The Group consisted of representatives from WMMP Steering Committees, public interest groups, consultants, lawyers, the Association of Municipalities of Ontario, and the private sector. The following is a list of the Working Group members.

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* These participants attended workshops related to the preparation of this EAP. The members do not necessarily endorse all of the contents of this EAP.

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Finally, the Ministry would also like to thank M.M. Dillon Limited for their assistance.

REFERENCE MATERIALS

Environmental Assessment and Joint Board Decisions are available directly from the Board:

Environmental Assessment Board
12th Floor, P.O. Box 2382
2300 Yonge Street
Toronto, Ontario
M4P 1E4

(416) 323-4806.

Copies of the following Acts are available from Publications Ontario:

Environmental Assessment Act, 1990
Environmental Protection Act, 1990
Consolidated Hearings Act, 1981

Publications Ontario
880 Bay Street
Toronto, Ontario
M7A 1N8

(416) 326-5300 or 1-800-668-9938.

Available from the Environmental Assessment Branch (416) 440-3450:

Guidelines and Policy on Pre-Submission Consultation in the EA Process (1987)

Interim Guidelines on Environmental Assessment Planning and Approvals (1989)

The Role of the Review and the Review Participants in the EA Process (1987)

A Citizen's Guide to Environmental Assessment (1987)

A Proponent's Guide to Environmental Assessment (1987)

Guideline for Preparing Environmental Assessment Proposals (1992).

The Ontario Environmental Assessment Act As It Relates To Waste Management Planning (June 1992)

Evaluation Methods In Environmental Assessment (1990)

Available from the Ministry's Public Information Centre (135 St. Clair Avenue West, Toronto, Ontario, M4V 1P5, (416) 323-4321), 1-800-565-4923 or FAX: (416) 323-4564.

Initiatives Paper #1:	*Regulatory Measures to Achieve Ontario's Waste Reduction Targets*
Initiatives Paper #2:	*Waste Management Planning in Ontario*
Initiatives Paper #3:	*Municipal Waste Management Powers in Ontario, A Discussion Paper*
Initiatives Paper #4:	*Measuring Progress Towards the Achievement of Ontario's Waste Reduction Targets*

Sectoral Environmental Assessment Proposal For Waste Management Planning (Vol.1)

Administration and Funding Guide (Vol. 2)

Users Reference Guide To Statutes, Regulations, Policies, Guidelines and Procedures (Vol. 3)

A Public Fact Sheet - summarizing all three volumes.

Guidance Manual For Landfill Sites Receiving Municipal Waste, November 1993.

Public Consultation Guide, January 1994

Ontario Waste Composition Study, January 1991

ABBREVIATIONS

3Rs	Reduce, Reuse, Recycle
C of A	Certificate of Approval
EA	Environmental Assessment
EA Act	*Environmental Assessment Act*
EA Branch	*Environmental Assessment Branch*
EAP	*Environmental Assessment Proposal*
EP Act	*Environmental Protection Act*
HHW	Household Hazardous Waste
IC&I	Industrial, Commercial and Institutional
MNR	Ministry of Natural Resources
MOEE	Ministry of Environment and Energy
MRF	Material Recovery Facility
MSW	Municipal Solid Waste
NIMBY	"Not In My Backyard"
ONAS	Ontario Native Affairs Secretariat
OWRA	Ontario Water Resources Act
PLC	Public Liaison Committee
SLC	Site Liaison Committee
WRO	Waste Reduction Branch (MOEE)

GLOSSARY OF TERMS*

3Rs of Waste Management	First, encourage people to reduce at source the amount of products or packaging purchased, consumed or used. Second, encourage people to buy reusable products or packaging and to reuse the products or packaging as often and as much as possible. Third, encourage people to participate in recycling programs.
Agricultural Soil Capability Classification	Is a national classification system as defined in the Canada Land Inventory of Soil Capability for Agriculture which refers to the capability of the soil for agricultural activity. The Food Land Guidelines considers lands where soil Classes 1 to 4 predominate as being of high priority for agriculture and worthy of protection.
Alternatives To	Are functionally different ways of managing problem or responding to an opportunity.
Alternative Methods	Are different ways of implementing the same activity.
Air	In the *EA Act*, "air" includes "enclosed air" (Clause 1(a)). In the *EPA*, "air" is defined as "open air not enclosed in a building, structure, machine, chimney, stack or flue". (See Environmental and Natural Environment.)
Approved Site or Facility	A landfill site/facility for which there is an existing and current Certificate of Approval (C of A).
Aquifer	A saturated permeable geologic unit (soil or rock) that can transmit significant quantities of water under ordinary hydraulic gradient. It is normally permeable enough to yield economic quantities of water to wells.

Areas of Natural and Scientific Interest (ANSI)	ANSIs are Provincially identified areas of land and water containing natural landscapes and features which have been identified as having values related to conservation, natural heritage appreciation, scientific study or education. Provincially significant ANSIs are recognized as the best natural areas and make the greatest contribution to the Ontario Ministry of Natural Resources' (MNR) protection objective.
Attenuation	Natural process through which the concentrations of landfill generated contaminants are reduced to safe levels.
Boundary Criteria	May be used to delineate the landfill site boundaries within candidate areas that are larger than the minimum site size required.
Buffer Area (Zone)	An area of land situated within the peripheral area surrounding an active filling area, but limited in extent to the property boundary, assigned to provide space for remedial measures, contaminant control measures, and for the reduction or elimination of adverse environmental impact caused by migrating contaminants.
Burial Ground	Are any lands which contain or consist of human burials.
Candidate Areas	Areas identified as being generally suitable for consideration as potential facility sites identified through preliminary screening on the basis of published data.
Cell	A space or contained area within the active fill area identified and prepared for receiving waste during any stage of landfilling, and subsequently compacted, enclosed by soil or other cover material.
Centroid or Waste Centroid	Is the theoretical geographic centre of waste production for any specified area. Centroids are used to determine the point of origin for the source of waste production.

Certificate of Approval (C of A)	The permit issued by the MOEE for the use, operation, establishment, alteration, enlargement, or extension of a landfill site. It is issued to the owner of the site with terms and conditions of compliance stated therein.
Class 1 to 3 Wetlands	Provincially significant wetlands are defined by MNR as classes 1 to 3 through the application of a wetland classification system. Wetlands contain critical fish, waterfowl and wildlife habitats. They may also perform an essential hydrological role and/or have significant social or economic benefits and are not desirable for landfill development.
Comparative Criteria	A set of broad factors (covering the natural, social, economic, financial, cultural, technical and land-use planning environments) used to determine the suitability of two or more waste management system alternatives and facility/site alternatives on the basis of common method of comparison.
Constraint Mapping	A method of overlaying inventory maps using the established exclusion criteria to assess the availability and suitability of candidate areas.
Contaminant	A compound, element or physical parameter usually resulting from human activity or found at elevated concentrations, that have or may have a harmful effect on public health or the environment.
Contingency Plan	A document plan detailing a coordinated course of action to be followed to control and remediate unanticipated occurrences such as a fire, explosion or release of contaminants in an uncontrolled manner that could threaten the environment and public health.
Control Order	Is a direction by the Ministry of Environment and Energy ordering a person to somehow change an existing operation to minimize or prevent further contamination of the environment.
Cover Material	Material approved by the MOEE that is used to cover deposited waste. Its use may be for daily, interim or final cover.

Criteria	Consideration or factors which assist in the elimination or comparison of options such as alternative components or sites.
Design and Operations (D&O) Plan (Report)	Design and Operations Plan or Report is the document detailing the landfill design and the planned sequence of activities including site preparations, daily operations, environmental control measures, site development and closure, post closure monitoring and maintenance.
Design Capacity	The maximum amount of waste that is planned to be disposed of at a landfill site.
Dump (Site)	Location where garbage is "dumped"; usually a site not approved to take garbage in the first place. Not to be confused with an approved and properly managed landfill site.
EA Acceptance	The decision by the Minister or the Board to accept an EA (Section 9) indicates that the EA provides a sufficient basis for a decision to be made on whether or not the undertaking should be approved. The Minister can accept the EA as submitted, amend and accept the EA, or order further research prior to accepting the EA. The acceptance decision is made formal by a notice provided to all EA submitters and by being published in the Ontario Gazette.
EA Act	*Environmental Assessment Act*, RSO, 1990. One of the primary acts of legislation intended to protect, conserve and wisely manage Ontario's environment.

Ecosystem	Any given area of the earth where living organisms (the "biotic components") interact with non-living things (the "abiotic components") in a cyclic exchange of matter and energy (e.g. oxygen, nitrogen, water, carbon dioxide, etc.). The basic unit of ecology. Ecosystems range in size from very small to very large. Examples include a pond, forest, lake desert, etc. An ecosystem consists of five types of organisms: plants, herbivores, carnivores, omnivores, and decomposers. Depending on how an ecosystem is defined, many organisms can be part of more than one ecosystem.
Effluent	Any liquid and associated material discharged into a surface watercourse or discharged on land as a means of final disposal.
Environment	As defined in Section 1(c) of the EA Act, RSO 1980: (i) air, land or water, (ii) plant and animal life, including humans, (iii) the social, economic and cultural conditions that influence the life of persons or a community, (iv) any building structure, machine or other device or thing made by humans, (v) any solid, liquid, gas, odour, hear, sound, vibration or radiation resulting directly or indirectly from human activity, or (vi) any part or combination of the foregoing and the interrelationships between any two or more of them, in or of Ontario;

Environmental Assessment (EA)	A detailed environmental study of a proposed project. The study includes an assessment of the need for the project, various alternatives to the project, potential social and environmental effects, methods to reduce the potential for any negative effects, methods to remediate any problems which do occur and monitoring techniques and frequency. The term "EA" refers to both the process of identification and evaluation of alternatives and the product (EA document) which describes how this process was carried out.
Environmental Effects	The effects that an undertaking has, or could potentially have, on the environment, either positive or negative.
Environmental Sensitive Area (ESA)	Those areas identified by any agency or level of government which contain natural features, ecological functions or cultural, historical or visual amenities which are susceptible to disturbance from human activities and which warrant protection. Such areas include: wetlands, areas of natural and/or scientific interest (ANSI), environmentally sensitive areas and areas of environmental concern, protected species, archaeological sites or historical resources.
EPA	*Environment Protection Act*, RSO, 1990, Chapter 141. EPA is another of the primary pieces of Provincial legislation governing the protection of the natural environment of the Province.
Evaluation	The process of applying criteria and eliminating or comparing options.
Facility	A solid waste disposal facility such as a landfill site.
Feasibility Report	A report documenting a rational, qualitative and quantitative comparison of the advantages and disadvantages of alternative landfill sites selected during the site selection process.
Fill Area	The area of a landfill site designed and designated for the disposal of waste.

Final Cover	Soil material or soil in combination with synthetic membranes, overlain by vegetation in a planned landscape, placed over a waste cell that has reached the end of its active life.
Floodplain	The area, usually lowlands, adjoining a watercourse which has been or which may be covered by flood water.
Garbage	A used material people no longer want and for which they can find no other use. Also called: rubbish, refuse, residual (waste), and trash. Garbage often contains may items which are reusable or recyclable. See *Municipal Solid Waste.*
Gas Collection System	An engineered system to contain and collect migrating landfill gas for safe dissipation, for energy recovery or incineration.
Gas Extraction Well	A constructed well, within or outside waste disposal areas, intended to draw in landfill gas for collection. Gas extraction wells are part of a landfill gas collection system.
Generic Design	Is a preliminary conceptual design of a facility (i.e. landfill) assumed in the site selection process.
Groundwater	Subsurface water that occurs beneath the water table in soils and rocks that are fully saturated.
Haul Route or Waste Haul Route	Is the assumed road route used by trucks to transport the waste from its source (waste centroid) to the designated waste management facility.
Heritage (Cultural) Feature	An individual part of a cultural landscape that may be focused upon as part of a broader scene, or viewed independently. The term refers to any built or modified objects in or on the land or underwater such as buildings of various types, street furniture, engineering works, plantings and landscaping, archaeological sites, or a collection of such objects seen as a group because of close physical or social relationships.

Heritage (Cultural) Landscape	A cultural landscape is perceived as a collection of individual man-made features into a whole. Urban cultural landscapes are sometimes given special names such as townscape or streetscapes that described various scales of perception from the general scene to the particular view. Cultural landscapes in the countryside are viewed in or adjacent to natural undisturbed landscapes, or waterscapes, an include such land-uses as agriculture, mining, forestry, recreation and transportation.
Heritage (Cultural) Landscape Units	Comprise collections of built features and other non-built landscape elements that are collectively considered to be of some historical or scenic interest.
Hydro Line Right-of-Way	Is a corridor of land for existing or planned hydro facilities and approved secondary uses.
Indicator	Refer to the specific measures for each criterion, for example, number of residents within 500 m for the criterion "disruption to residents".
Industrial Waste	Any product that is the direct or indirect by-product of the manufacturing of a product or the performance of a service. The EAP Guideline is not applicable to waste disposal sites receiving liquid industrial or hazardous waste.
Landfill Site	A parcel of land where solid waste is disposed of in or on land under controlled conditions for the purposes of waste management.
Leachate	Water or other liquid that has been contaminated by dissolved or suspended particles due to contact with solid waste.
Leachate Collection and/or Treatment System	A system where landfill produced leachate is collected and treated to remove contaminants prior to its release to the environment.
Leachate Monitoring System	A system of strategically placed wells or other measuring devices for scrutinizing and assessing the movement of leachate and its effect on ground and surface water resources.

Limit of Filling	The outermost limit at which waste has been disposed of, approved or proposed for disposal at a landfill.
Liner	A constructed continuous layer of reworked natural soil (usually clay), or synthetic materials placed beneath and on the sides of a landfill, or waste cell that restricts the downward or lateral migration of leachate or landfill gas.
Methane Gas	An odourless, colourless, highly combustible and potentially explosive gas that is lighter than air, produced as a by-product of the process of decomposition of organic wastes.
Ministry	Same as MOEE.
Mitigation	The activities carried out, or proposed, by a proponent of an undertaking to minimize or ameliorate the environmental effects of the undertaking.
MOEE	Ontario Ministry of Environment and Energy.
Monitoring	Regular or spontaneous procedures used to methodically inspect and collect data on the performance of a landfill site relating to environmental quality (i.e. air, leachate, gas, ground or surface water, unsaturated soils, etc.).
Monitoring Well	A water well used for the purpose of monitoring ground water conditions.
Municipal Solid Waste (MSW)	More commonly referred to as garbage, this waste material is handled by municipal collection and/or disposal services. It incudes two main types of solid waste: residential or domestic waste, and industrial, commercial and institutional waste. Municipal solid waste does not include hazardous and liquid industrial waste. Also known as garbage, refuse, rubbish and trash. Different municipalities make legal distinctions among these terms, but they are all forms of municipal solid waste. See *Industrial, Commercial and Institution Waste; Residential Waste.*

Municipal Waste	Under Ontario Regulation 347, municipal waste means any waste, whether or not it is owned, controlled or managed by a municipality, except, hazardous waste, liquid industrial waste, or gaseous waste, and solid fuel, whether or not it is waste, that is derived in whole or in part from the waste included above. In a general sense, municipal waste refers to materials discarded by individuals in the course of their daily activities at home and by industries and business as a result of their normal operating activities, but not including liquid industrial waste or hazardous waste.
Natural Attenuation	Where contaminants are reduced to acceptable concentration levels by natural mechanisms (dilution, adsorption onto the soil matrix, etc.), biological action, and chemical interaction.
Net Effects	The residual environmental effects remaining following the consideration of mitigative and enhancement measures of potential effects.
Off-Site	Areas considered to be potentially influenced by any effects from the proposed facility.
Official Plan	A legal document approved by the Minister containing objectives and policies to provide guidance for the physical development of a municipality or part thereof or an area without municipal organization.
On-Site	Areas within which features will be displaced or lost by property purchase and facility development.
Percolation	The movement of infiltrating water through soil or other solid medium. Often used interchangeably with hydraulic conductivity, but not strictly correct. Permeability is a property of the porous media only. Dependant upon media properties that affect flow, diameter, sphericity, roundness and packing of the grains.

Permeable Material	A porous substance which allows the passage, or movement of materials through it (e.g. sandy soil).
Point-of-Impingement	The location where a pollutant first comes in contact with a receptor (e.g. an individual).
Pollutant	See *Contaminant.*
Pollution	The release of contaminants into the environment. Pollution abatement is the removal of contaminants from emissions or effluent before they are released into the environment. Even better than pollution abatement is pollution prevention which involves changing industrial processes/activities to ensure that they do not create contaminants in the first place.
Preliminary Field Check	A preliminary field check involves on-site field investigations.
Proponent	A person who carries out or proposes to carry out and undertaking, or is the owner or person having charge, management or control of an undertaking.
Permeability	Often used interchangeably with hydraulic conductivity, but not strictly correct. Permeability is a property of the porous media only. Dependant upon media properties that affect flow, diameter, sphericity, roundness and packing of the grains.
Provisional Certificate of Approval (Provisional C of A)	Same as *Certificate of Approval.*
Public Hearing	A quasi-judicial process, whereby the public or any affected parties have the opportunity to voice concerns or otherwise address studies and the planning process carried out by the proponent.
Public Liaison Committee (PLC)	A committee representing a wide range of public interests that participate in the process through such activities as review of documents, advice on consultation, criteria, alternatives and methods to be used.

Reasonable Use Policy	A policy developed by the Ministry to stipulate to the level of ground water quality impairment that may be permitted to occur at site property boundaries, to allow the reasonable use of adjacent properties or land without adversely affecting public health and the environment.
Recycling	Sorting, collecting or processing waste materials that can be used as a substitute for the raw materials in a process or activity for the production of (the same or other) goods. For example, the "Blue Box" system, in-plant scrap handling, or raw material recovery systems. Recycling is also the marketing of products made from recycled or recyclable materials.
Recycling Facility or Plant	A facility where recycling of used or waste products is carried out.
Reduction	The decrease in the quantity of waste produced through modified consumer practices and industrial production changes to generate fewer useless by-products. See *3Rs of Waste Management.*
Reduction (of waste or component of 3Rs program)	Those actions, practices or processes which result in the production of less waste.
Refuse	See *Waste.*
Relocatability	Refers to the difficulty or hardship an individual would have to endure to move their residence, business or community feature to another location.
Remedial Action	Corrective action taken to clean-up or remedy a spill, an uncontrolled discharge of a contaminant, or a breach in a facility or its operations, in order to minimize the consequent threat to public health and the environment.
Residential Waste	Waste produced by all types of households, including detached dwellings, row housing, condominiums and apartments. In Ontario, residential waste makes up about 40% of the total municipal solid waste stream. See *Municipal Solid Waste.*

Screening Criteria	Criteria applied to the site selection study area in the initial stages of the process to screen less preferred areas.
Solid Waste	See *Municipal Solid Waste.*
Solid Waste Disposal Site or Facility	A site or facility such as a landfill site where solid waste is disposed of.
Source Separation	The separation of various wastes at their point of generation for the purposes of recycling or further processing.
Speciality Crops	1) soils which have suitability to produce speciality crops; or lands which are subject to special climatic conditions; or a combination of both; 2) a combination of farmers who are skilled in production of a special crop; capital investment for related facilities and service to produce, store or process a crop. Specialty crops are considered to be particularly sensitive to the siting of waste management facilities due to their unique resource requirements as mentioned above.
Stop Order	Is a direction issues by the Ministry of Environment and Energy ordering a person to immediately stop an operation which is causing a contamination of the environment.
Storm Water	Run-off that occurs as a direct result of a storm event or thaw.
Transfer Facility or Station	A facility where solid wastes are brought by smaller refuse collection vehicles and transferred to larger trucks to be hauled to a disposal site, processing facility or resource recovery facility.
Vector	A disease carrier and transmitter, usually and insect or rodent (i.e. vermin).
Viewshed	The geographic area from which a facility, or portions of, will be visible.

Waste	Ashes, garbage, refuse, domestic waste, industrial waste, or municipal refuse and other used products as are designated or interpreted by the provisions of the *EPA*.
Waste Disposal	Placing waste for long-term storage in a landfill site or in an incinerator for partial destruction. Waste disposal facilities must be certified for use. Their purpose is to keep the waste from entering into the environment.
Waste Disposal Site (Facility)	Any land or land covered by water upon, into, in or through which, or building or structure in which, waste is deposited or processed and any machinery or equipment or operation required for the treatment or disposal of waste.
Waste Diversion	Using the 3Rs of waste management as part of a strategy to keep used materials from going to disposal. See *3Rs of Waste Management.*
Waste Management	The management of waste and used materials through the 3Rs and disposal. Proper waste management puts first emphasis on waste reduction, reuse and recycling, before disposal methods are used. See *3Rs of Waste Management; Waste Disposal.*
Waste Management Plan	A long-term plan to service the waste needs of a particular area.
Waste Management System	All the facilities, buildings and equipment used for the collection, treatment and disposal of wastes, and for the reduction of used materials going to disposal. A complete waste management system consists of disposal and diversion components. A waste management system is defined for a particular "service area", which is the population living in one or more municipalities.
Waste Management System Alternatives	Various combinations and permutations of various waste alternatives and handling/collection options.
Water Courses	Any drain, creek, stream or river.

Water Table	Surface of the ground water at which the pressure is atmospheric. Generally the top of the saturated zone.
Watershed	A dividing ridge between two drainage areas or an area drained by a particular water body.

** For legal definitions, reference should be made to applicable legislation.*